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# ADVANCED MANAGEMENT

MAY, 1954

VOL. XIX NO. 5

## *In This Issue . . .*

Business And America's Unchanging Tide
*Benjamin F. Fairless*

Ford's Reorganization: The Management Story
*Richard E. Roberts*

Applying Scientific Management To The Office
*Edward W. Jochim*

Must Management Change For Automation?
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# ADVANCED MANAGEMENT

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# Meat On The Management Table . . .

THROUGH SAM publications, seminars, round tables, Chapter meetings, conferences, the manager is able to know what is going on in his own field, and what is happening in business and industry as a whole. SAM enables the manager to distinguish trends that affect him and his company. It puts out the meat on the table of management discussion—the methods and techniques necessary to a sound management foundation.

The general manager, the production and sales manager can keep up with new developments through full participation in SAM — in the Chapter program and in conferences.

The tempo of progress is accelerating. What happens in one small part of industry or business will set into motion influences that will affect both you and your company. These influences will affect your methods of operating. They will ultimately affect your policies of administration.

Cross-pollination of ideas between companies and between industries makes the stream of change and progress that is continuous. We must all be a part of this dynamic movement. But what is *in* this stream of change?

First, management today is recognizing the need for more and better operating facts as a means for improving upon management decisions. This is definitely indicated by companies measuring *a fair day's work* more accurately, using the SAM Performance Rating Films.

Other factual approaches to management decisions are found in: (1) job and salary evaluation, (2) psychological listing in hiring and the development of staff and, (3) the use of several of the mathematical sciences encompassed in Operations Research.

The development of executives and other key personnel is becoming more important to every company. This is indicated by the number of men attending such programs as the one at the Harvard Business School and those at other universities.

Automation, although limited generally to mass production industry, is actually being effectively utilized today in many companies. As a result, indirect labor is becoming much more important than direct labor.

The yearly management audit is being used consistently now by the most successful companies in the country. It is appraisal and reappraisal used very much as the accounting audit has been used for many years.

Incentives are being applied more broadly. Incentives are not only used for the factory group in a plant, but are now being applied to the executive and key group of supervisors, office and sales organization. The use of financial and non-financial incentives has been made possible by a better understanding of the pitfalls and problems that can be avoided by planning and good management.

Conditions in business generally, in the market and among competitors, are always changing. They are never static.

So the various appetites of management—the need for more and better operating facts, proper executive development, problems of automation, incentives — all are assuaged by The Society's constant effort to put real meat on the management table — with successful conferences, round tables, vigorous Chapter activity, and through the continuous nourishment of the SAM national publications.

BRUCE PAYNE, PRESIDENT, SAM

*BENJAMIN F. FAIRLESS, president and director of the United States Steel Corporation since 1938, has had a long and successful career that he began in 1913 as a schoolteacher. The list of his titles since that time includes: civil engineer, mill superintendent, general superintendent, vice-president in charge of operations, vice-president and general manager, executive vice-president (Republic Steel), president (Carnegie-Illinois Steel Corporation, 1935-1937). He resides in Pittsburgh, and is a member of numerous professional and social organizations, as well as being vice-president of the American Iron and Steel Institute.*

# Today's Business Still Rides On America's Unchanging Tide

*by Benjamin F. Fairless*
*President*
*United States Steel Company*

**The surest preventive medicine against a major business recession, the author says, is the continuing expansion of our productive facilities, unhindered by punitive taxation of corporations or individuals. From each man's effort to gain "a little more for himself," America's growth is assured.**

EVERY management man must view with some alarm the seemingly rapid disappearance of one of America's most precious natural resources—our native supply of plain, old-fashioned common sense. What has happened to it recently?

Some time ago, the outstanding economists of this country met in Washington to survey the state of the nation's prosperity. They studied every available index of business activity, and when they had gone over all their charts and tables, peered into the future through their crystal slide rules, the consensus among them was that 1954 will not be the best year in our history. It will only be the second or third best, according to their calculations.

The prospect of struggling through a year that is only the second or third most prosperous we have ever known is not exactly a fate worse than death. Yet if we were to believe even one half of the alarmist talk that we see quoted in the press, we could only conclude that we are sliding into a terrible depression—that America's Golden Age is past, that our only chance of salvation is to beg the Government to run our business for us.

I, for one, am not ready to give this country back to the Indians. Most of this depression talk that we hear is inspired more by the politics of our present situation than by its economics.

While no real American can possibly want a recession, there are certain groups which stand to gain political advantage by creating the illusion of recession. Generally speaking, these are the groups which have a vested interest in "Big Government." They are people who believe in an all-powerful and almighty State. They are the "outs" who want to get back in.

It is an old and honored rule of politics that voters don't change horses in the middle of prosperity. So the natural inclination of these groups is to exaggerate every decline that occurs in any part of our economy. In this way, they hope to persuade the American people that the situation is getting out of hand, that private enterprise cannot cope with it, that Government must therefore step in.

Now as one example of these tactics, let us look for a moment at unemployment. Alarmists tell us that there are more than two million persons out of work in this country today. That does sound very serious indeed. The fact is that even in times of "full employment" there are almost always 1½ to 2 million unemployed who are in the process of changing jobs.

These "unemployed" may be moving from one city to another. They may be looking for an opportunity which is better suited to their particular skills or tastes, one that will therefore provide better pay and greater security. Or they may have been laid off, for one reason or another.

But they can, and do, find new jobs. And the normal turnover continues. The men who are unemployed this month are not the same ones who were out of work last month, or who will be next month. Meanwhile, of course, their unemployment insurance not only helps to cushion the financial hardship, but often encourages them to risk making a change in the hope of bettering themselves.

So the truth is that unemployment today is very close to the irreducible minimum which normally prevails in peacetime; it is actually below the average level of recent years.

The years since the end of World War II have been among the most prosperous that America has ever seen. Certainly no one—so far as I know—has been complaining about any lack of jobs up to now. But month in and month out, during this entire period, there has been an average of 2¼ million persons out of

work. And at the high point there were 4½ million.

Moreover, I think we should not forget that the number of people who do have jobs, and who are at work, is about 3½ million higher today than it was in 1947 at the start of this post-war prosperity.

These are the simple facts. But they have been distorted greatly in what seems a calculated attempt to make it appear that the recent rise in unemployment is a serious threat to our economy. The authors of this deception are already clamoring loudly for immediate government action. And what action do they want?

Specifically, they demand another huge program of deficit spending, which would come to as much as 12 billion dollars this year. In other words, they propose another crippling round of inflation, with wages and prices chasing each other in the same old vicious spiral that has already caused so much suffering.

If our national supply of common sense has not been wholly exhausted, the American people will take a long, cold look at that primrose path of inflation before they travel it again. For the destination to which it leads is national ruin.

### *A Revealing Look Into The Recent Past*

So instead of trying to read the inscrutable future, let us turn our eyes, for a moment, in the opposite direction; and use a little of that twenty-twenty-hindsight with which the Good Lord, in His wisdom, has so generously endowed us.

American business has just passed the anniversary of an important event; it should not be allowed to pass unnoticed, though I doubt if any group, anywhere, will particularly want to celebrate it.

It was just twenty years ago that the Gold Reserve Act of 1934 went into effect. That was the law under which the gold content of our dollar was reduced to 59 cents. It represented a bold and conscious effort on the part of our Government to produce a great wave of inflation that would overcome the forces of depression.

In the years that followed, deficit was piled upon deficit. Money was spent like paper. In addition to a huge public works program, thousands of leaf-raking, shovel-leaning, and boondoggling projects were undertaken. And nothing that the Government could possibly do was left undone.

But it didn't bring prosperity; and it didn't end unemployment. In 1939—when World War II began—there were still 9½ million jobless men and women in this country who were desperately seeking work. That was 17 per cent of our total civilian labor force—one man out of every six.

So hindsight, and a little common sense, should convince us by now that Government alone can neither create prosperity nor overcome depression. Only the American people themselves can do that.

### *Situation Was Noted By Secretary Humphrey*

The Secretary of the Treasury, George Humphrey, recently described the situation very well. He said:

"The success or failure of our economy depends chiefly upon our people themselves—upon businessmen, laborers, farmers—everybody in America. The only thing that Government can do is to provide a fertile field to work in; but the thing that makes America go—and that always has and always will—is the individual effort of 150 million people, all trying to do a little more for themselves, a little more for their families, and a little more for each generation—every fellow trying to improve his own position. The cumulative effect of all that work, by all those people, is the thing that has made America what it is today."

President Eisenhower struck much the same note in his annual message this year when he said that government can strive to maintain an economic system whose doors are open to enterprise and ambition, but that enterprise and ambition are qualities which no government can supply.

Now I can think of no better illustration of the truth of those two statements than what was going on in one company in Wilmington all during the depression. Twenty years ago, while many people, and some of our businessmen, were looking to Washington to bail them out of their difficulties, the Du Pont Company was spending millions of dollars on a program of research which led finally to the discovery of nylon, orlon, dacron and many other domestic commodities.

It was spending additional millions to develop, perfect, and to market many new discoveries such as cellophane, neoprene synthetic rubber, freon gas (which revolutionized the air conditioning industry), Lucite, Butacite, and a long list of plastics.

Today these products account for nearly half of Du Pont's total sales. Because this company had faith in itself and faith in the future of America, our whole economy has been strengthened. Hundreds of new small businesses have been created as a direct result of these discoveries. Thousands of new jobs have been opened up; millions of Americans now live better and more comfortable lives because of these developments.

This is a fine example of what business has done, and is doing, to provide not only for the steady growth of our economy, but for the constant betterment of our way of life. Last year, American industry spent more than three billion dollars on research. Much of this money went into the creation of new products, new discoveries, new jobs. A lot of it also went to devise new production techniques and new machines which have enabled American workers to produce more, to earn more and to buy more.

But research in itself is merely the first step. It represents only a small part of the costs that industry meets each year in its effort to keep our economy growing. The discoveries made in the laboratory are only the blueprints of prosperity. They have still to be transformed into the plants and facilities that turn out the new products for our customers and provide the new jobs and new earning power for our workers.

And that takes money.

Today we are told, for example, that the Government has 15 billion dollars worth of public works projects on the shelf, and that it will use them if necessary to prevent a recession. Now 15 billion dollars would certainly provide several million jobs. It would undoubtedly give us some magnificent public buildings, many beautiful parks, and a lot of fine new roads that we badly need.

### *Human Mind Cannot Conceive $15 Billion*

In fact, 15 billion dollars is a sum so vast that our minds cannot really comprehend it at all. But it is small potatoes, indeed, when you stop to think that American business last year spent nearly twice that much for new plants and equipment alone. Not only did these expenditures provide millions of jobs for those who performed the work, but they created productive facilities which will go on and on, as long as they exist, to generate a wealth of new purchasing power for all the American people. So the dollars spent in this way are many times more important to the future prosperity of this nation than the usual public

works program could ever be.

Moreover, these private investments in new plants and equipment are not one-shot, stop-gap, emergency devices to be tried for a while, then abandoned. They go on and on, year after year. Last year they reached an all-time peak of 28 billion dollars. During the first quarter of 1954, they were even higher than they were the first quarter of last year.

Harlow Curtice, president of General Motors, has announced that that firm will spend a billion dollars in the next two years for this purpose; and the steel industry will spend three-quarters of a billion during the current year alone. In the past two years, United States Steel, itself, has put more than 830 millions into productive facilities, and even though its great post-war expansion program has been practically completed, it will still spend another 300 millions in this way, in 1954.

### *Industry Bets Against Depression*

Industry is betting its shirt that there won't be a depression. But I would put it another way. I would say that industry is merely continuing, as it always has, to pay the premiums on the most important insurance policy in the world—a policy that insures America's future prosperity.

Now that is what American business can do, and is doing, to prevent depression. It is only way that I know of to increase the earning power, the purchasing power, and the living standard of people in every walk of life. It is the job of American management, large or small. No government can do it for us.

But government does have a vital job to do in connection with this process.

We all know that these billions of dollars which are being poured into new plants and equipment have to come, directly or indirectly, from people who are willing to risk their savings in productive enterprise. If this process is to continue rapidly enough to meet the needs of our growing population, and to prevent recession, then government must do two things:

First, it must maintain an economic atmosphere which will encourage an ever-increasing flow of private investment. Second, it must create an atmosphere which will encourage and enable American business to operate at peak efficiency by scrapping obsolete, labor-wasting facilities even though they are not worn out and have not been fully depreciated. Failure to do this deprives the worker of the power to produce more and to earn more, and it deprives the consumer of the opportunity to buy more goods, and better goods, at the lowest possible prices.

Unfortunately, this encouraging economic atmosphere does not prevail today. For many years tax laws have been based on the destructive proposition that anything which is bad for business is automatically good for the country.

But now the government is trying to correct this situation. It has evidently come to understand that nothing which is bad for any group of its citizens can possibly be good for any other group, or for the country as a whole. So it is striving, conscientiously, to give everyone in the nation an incentive to do "a little more for himself, for his family, and for each generation" as Secretary Humphrey put it.

To that end, Congress is working on a complete revision of the tax laws. The amendments it is considering are designed to encourage farmers, workers, housewives, dependents, businessmen, investors, and every other economic and occupational group in this country, to increase their productive efforts, and thus to enlarge their own rewards. If such a revision can be accomplished with fairness to each of these groups, and with a real understanding of the problems and the needs of all of them, then, in my humble opinion, it will do more to promote prosperity in this country than all of the deficit spending, all of the make-work schemes that have ever been dreamed up since the beginning of time.

### *Government Should Provide Four Fundamentals*

When we analyze the forces which control this economy of ours, we find that there are four basic requirements which Government can, and should, provide:

First is peace. Only in peace can any nation grow and prosper without the violent boom and bust that war produces.

Second, government must provide a stable currency that will not shrink in value with every passing year.

Third, it must preserve competition in a free and open market, where the customer alone determines what shall be produced and what he is willing to pay for it.

Fourth, in the conduct of its own affairs, government must strive to preserve the maximum possible incentive for all of its citizens so that the ingenuity, ambition and enterprise of the American people may not be impaired or curtailed.

The first three of these basic requirements have been met in the past twelve months. We have peace. The purchasing power of the dollar is practically the same as it was a year ago. And we have a free market where the buyer, most decidedly, is boss. So, with these blessings we have been able to achieve the highest level of prosperity that this nation, or any nation, has ever enjoyed in the history of the world.

When the Government has fulfilled the fourth and final requirement, as it is now striving to do, then its job will have been done. From that point on it is up to us. The future of business and industry in this country will be exactly what we, ourselves, have made it. The responsibility is ours; and we cannot, and must not, deny it.

### *Research, Production Is Tops; Salesmanship Rusty*

So far as research and production are concerned, no one can doubt, I believe, that American business has done a magnificent job. But our responsibility does not end with that. We still must sell our products. And our salesmanship is perhaps just a little rusty.

After all these years of shortages, when people have been fighting to buy our wares, it wouldn't be surprising if some of us had forgotten just how this gentle art of selling is practiced successfully. If any of you find yourselves in that unhappy predicament, let me remind you of the clothing store proprietor who was trying to clear out last winter's stock.

One of the left-over suits was a nightmare. It was perfectly tailored, cut from material of the finest quality, but the pattern consisted of enormous checks, in green, purple and orange.

As he was going out to lunch the proprietor called his assistant: "Sam, we gotta get rid of that suit. See if you can't figure something to do about it while I'm gone."

He got back about an hour later, and found to his amazed delight that the suit had been sold. But the store was a wreck and so was Sam. A whole rack of clothing had been overturned. A showcase was broken. Sam's face and hands were cut and bleeding.

"Good Heavens, Sam," said the proprietor. "What happened? Did you have to force that suit on the customer?"

"Oh, no," said Sam, "he didn't object at all. But I sure had one helluva scrap with his seeing-eye dog."

I don't approve or recommend Sam's

methods, but I'm bound to admit he possessed the true spirit of salesmanship. We need more of that spirit today if we hope to keep our plants running at top speed.

Let me sum it up this way:

America today is undergoing that difficult, sometimes dangerous transition from war to a peace-time economy. All management is closely watching every economic index that records a change in business activity.

But prosperity, unfortunately, is not a mere statistic. It is primarily a state of mind. If we permit anything or anybody to destroy the confidence of the American people, or to undermine their faith in the future, neither we nor the government can prevent a depression.

And that is why those who exaggerate and distort this very minor decline in the level of our prosperity are playing a dangerous game that can never be worth the candle, no matter how helpful this tactic might prove in advancing private political fortunes.

It would be wonderful, of course, if our economy always grew at a steady, unfaltering pace; but that never happens in any nation, anywhere. To me it has always seemed that our economic progress is a good deal like the waves that break over the beach on the incoming tide. Each one comes roaring in, spends itself, and then recedes. But in doing so, it contributes to the volume and the force of the next wave, which always comes in a little farther.

Yet those who spend all their time watching the waves can become so obsessed with this process that they never observe the onward movement of the tide itself. So it is, I think, with many of our pessimists today. They cannot see the tide for the waves.

America has fought and survived six wars. It has suffered disastrous periods of inflation and deflation. It has weathered an endless series of recessions, depressions, and panics. Through it all, this nation has ridden the crest of an unchanging tide that has carried it always higher until today we have reached a standard of living so fabulous that our grandfathers could not have imagined it in their wildest dreams.

Many times, I am sure, there must have been many who felt that the tide had turned; but it never had—and it never will as long as freedom of opportunity and freedom of competitive enterprise continue to exist in this country.

We have not reached the end of our Golden Age. This, in truth, is only the beginning. In my opinion we stand on the doorstep of the greatest era of progress this nation has ever seen.

Before us lies the challenging task of taming the atom. And we have yet to harness the source of all earthly energy —the rays of the sun; for today, only one-tenth of one per cent of that energy is put to use. In our laboratories we are perfecting amazing automatic devices that will diminish still further the expenditure of human effort, and increase enormously the production and pay of our workers. And our population is growing in numbers with almost incredible rapidity.

Within the next twenty years, we are told, we will have 45 million more people to feed and to house and to clothe. Can you imagine what that means to our economy?

Let me tell you what it means in terms of steel. Within the last year, U. S. Steel completed the new Fairless Works, on the Delaware. That is the largest single steel plant that has ever been built at one time. But if the per capita consumption of steel remains what it is today (and even if it does not rise, as it always has throughout this century) it will still take fourteen more plants of that size to meet the demands of these 45 million new people. That means a new Fairless Works every seventeen months for the next twenty years—and it took us thirty months to build the last one!

Make no mistake. America's is an unchanging tide. I hope that I may live to witness the 200th Anniversary of America's Independence just twenty-two years from now. Because I can think of no greater satisfaction than to be able then to look back once more upon the future that now lies before us! END

### How Far Does Management Responsibility Really Reach?

The executive in every walk of life, whether he knows it or not, directs social forces and determines the destiny of countless people, not only those who work in his immediate organization but among the larger public as well. He should comprehend this and recognize his responsibility. The role of statesman is thrust upon him by the nature and demands of the position he occupies. To fulfill it he must be a philosopher. But he cannot be a successful philosopher unless he understands the inherent life of institutions, the reasons why people in institutional situations behave as they do. This knowledge is the philosophy and technique of management.

Management is not a matter of pressing a button, pulling a lever, issuing orders, scanning profit and loss statements, promulgating rules and regulations. Rather, management is the power to determine what shall happen to the personalities and to the happiness of entire peoples, the power to shape the destiny of a nation and of all the nations which make up the world. Executive work, therefore, is statesmanship and the techniques which the executive employs are only incidental to the forces which he sets in motion and helps to direct. It is no exaggeration, therefore, to say that the management of the nation's large institutions, both in business and in government, determines the fate of millions of individual lives as well as the lives of generations unborn. . . . *from The Executive in Action, by Marshall Dimock, Harper and Brothers*

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# Ford's Reorganization: The Management Story

*by R. E. Roberts, Manager*
*Management and Employee Information Dept.*
*Ford Motor Company*

**Every businessman has heard of the Ford Company's reorganization. But what was wrong? Was it Ford's management? What exactly was done? Here is the story. Fundamentally, it is one of decentralization of management force. The author was there; he tells how staff and operating functions were divorced, so that line and staff organizations could be set up, with only policy definition handled in the central office. He describes management's use of subcommittees, the use of reports as work checks, and the tremendous impact of better management on the cost control area, and finally outlines the company's future plans**

MILLIONS of Americans have found the Ford Story to be of interest because it is, in many ways, the American story. It had its beginning many years ago when the late Henry Ford made industrial history by putting America on wheels, through the miracle of mass production.

Possibly that era of our industrial history which Mr. Ford so outstandingly epitomized came to a close in the thirties. It was an era of rugged individualism, bearing with it great rewards for men of his stature. It was the era of the owner-manager.

Management men of this generation represent a new era, both economic and social. After several decades of painful evolution, we live and work under greatly changed conditions. Most management belongs to the employee-manager group, virtually a new profession.

We are accountable to stockholders for our performance, and we must deal with unions which speak for the masses of hourly workers. Our problems are more numerous and difficult, because most management decisions must be made in the light of this new, strong and often-times irresponsible union leadership.

Further, we as managers must be content with lesser material rewards than the owner-manager of the past era. It may be, however, that this is a blessing in disguise. By comparison with professions such as teaching, the ministry, or even the legal profession, not to mention the politician (the honest one, that is) the rewards of the business administrator are still large.

But this business area is interesting chiefly as philosophy. Much more can be seen from a kaleidoscopic view of the new Ford Motor Company, an organization that has made one of the most successful comebacks in industrial history.

First, there is beyond question an intangible something that has motivated every level of Ford management in our effort to regain the market position enjoyed by our company some years ago. This effort is a Management story.

The early part of 1946 is recognized as a turning point in the history of Ford Motor Company. We had entered a lush post-war seller's market with an industrial organization that was about as modern and competitive as the Model T. The company which at one time had taken 50 per cent or more of the automobile market in its stride, was now selling less than 20 per cent of the industry total, and was sliding downward.

When the new management team headed by Henry Ford II took over leadership of the company, it faced a reconstruction and rehabilitation job without parallel in American industry. There was no doubt in anyone's mind that if we were merely to hold our own, much less recapture any lost ground, there would have to be some radical changes.

Ford at that time was a vast, complex industrial system controlled and directed by a handful of men in Dearborn. With responsibility and authority so tightly confined to a few, the company was like an awkward, misshapen giant suffering from hardening of the arteries.

Not only was the organization dangerously overcentralized, but there was no clear definition of the functions and duties of each component. No group could be sure of just what was expected of it. Many unrelated activities were lumped together in a hopeless mixture of staff and operating functions.

All in all, our organizational setup was old fashioned, inefficient and expensive. It was extremely difficult to evaluate any

operation accurately, and it was impossible to tell where we were making money and where we were losing it. About the only thing management knew for sure was that we were operating deeply in the red.

An equally large part of the problem was the lack of adequate financial control. There were stories to the effect that the company used to determine its financial progress by the amount of money in the bank at the end of the year. That was only a slight exaggeration.

When reorganization began, there was little financial information available. The manufacturing staffs knew direct labor costs in minutes, but not in terms of dollars. Overhead controls and budgets were virtually non-existent.

The situation was further complicated by the fact that nearly all major costs had shot up considerably over 1941 levels and were still soaring. Not only were wages far above previous levels, but it was taking much longer to build a car than it had taken in 1941. Both labor and overhead costs were up nearly 100 per cent over pre-war levels. In the meantime, the Office of Price Administration held prices down to a point where it was impossible even to recover costs.

## *Company Was Losing Nearly $9,000,000 Per Month*

The quickest way to describe the financial problem is to say that, as of June 30, 1946, our company was more than 52 million dollars in the red for that year, and losing money at the rate of nearly 9 million dollars a month.

As far as products were concerned, the situation was not much better. Our cars and trucks were good, but they weren't modern. Impartial surveys showed that the public preferred our chief competitor's products by nearly 2 to 1. Competition was ahead of us in styling, design, mechanical features and advanced engineering. We would have to step up our engineering and research considerably just to keep pace with changing consumer tastes and preferences, let alone gain leadership.

We could take no pride in selling everything we produced because, as we all know, people were hungry for any kind of car, just so it was new. In a competitive market, our situation would have been a lot more serious.

An equally serious problem was the condition of plants and facilities. This was one of the most serious handicaps of all: plants were crowded, poorly laid out and highly inefficient for the production of our bigger and more complicated post-war cars. Much of the machinery and equipment was old and obsolete, adding considerably to over-all costs.

In addition, productive facilities were not in balance with requirements. We needed more manufacturing facilities of various kinds to eliminate bottlenecks, such as motor production, and to assure an adequate supply of parts and materials. We needed more steel of all types. And we needed a better system of parts distribution, with outlets close to the newer and faster-growing centers of population.

## *Purchasing Policies Led To Post-War Disadvantage*

There were obvious improvements to be made in other areas as well. Purchases of parts and materials from outside suppliers represented some two-thirds of total manufacturing costs. Yet purchasing policies had been such that we found ourselves at a serious disadvantage in the intense post-war competition for vital materials.

The one bright spot in the picture was a relatively sound dealer organization as far as Ford cars and trucks were concerned. The Mercury and Lincoln dealer situation needed strengthening and enlarging. Proven systems of dealer management tools were in effect, and there existed a loyalty to Ford that was good. But there was an uneasiness in dealers' minds, born of years of selling non-competitive products.

We were one of the big question marks of American industry. The direction we took, up or down, would have a serious impact on the American economy. But there was no doubt whatever in our minds as to which way we would go. Our goal was to re-establish the Ford Motor Company in the fastest possible time, as the foremost producer in this country of automotive vehicles styled for beauty and of mechanical excellence. We mapped out a broad plan of action and started moving forward.

We put our primary emphasis at first on people and organization. Drawing both from our own ranks and from outside the company, wherever necessary, we filled key management posts with the best available personnel and gave them as free a hand as possible in choosing their own staffs. We spelled out what we meant by management, defined the functions and responsibilities of each management position, and made it very clear that we were concerned with good management at all levels, from Foremen to vice-president.

## *Five Steps Toward Decentralization*

At the same time, we began taking the management load off the backs of a few men and spreading it out in large, small and medium-size parcels. We had five important goals:

1. To relieve top management of the burden of routine operations.
2. To provide policies for the guidance of management.
3. To define the functions of each unit of the organization and to delegate responsibility and authority to the directing heads of the units.
4. To provide each executive and supervisor with the necessary tools of management, and
5. To establish a means of measuring performance.

What this meant, of course, was decentralization. It enabled us to draw upon the intelligence, the skill and the initiative not just of a few over-worked executives, but of thousands of capable men all down through the ranks of the organization.

It meant that all of our managers became managers in every sense of the word, with specific responsibilities and with adequate authority to carry out those responsibilities.

One of the first steps was to divorce staff and operating functions. What we were aiming at, essentially, was a line-and-staff organization with only policy definition and coordination by the Central Office Staff. Naturally, this couldn't be done overnight.

Space does not permit me to go through each successive step in this organizational program. I might emphasize, however, the changes that took place in our management committees. The original Policy Committee of 11 men, which had been burdened with the initial review of every major problem that confronted our executive staff, had little time for the kind of long-range planning that was needed if we were to keep moving ahead on a sound basis.

So, in 1947, there were created a number of sub-committees, all of them to include additional personnel outside the original Policy Committee. The function of these new groups was to consider the more immediate operating policies and

problems and to make recommendations to the main policy group. There are now ten of these sub-committees performing a vital staff function.

In the meantime, the company had been moving ahead rapidly in the second critical area I mentioned earlier, financial control. We needed the best available instruments to help chart our course, and for these we turned to our new Finance Staff.

Once we had set a program, the number of units to be built in a specified period, the profit we expected to realize, the design costs of the different models, the selling prices, facilities required, the amount of cash needed to carry out the whole operation and so on; the next step was to set up a system of controls so that our progress could be measured at specific intervals and corrective action taken whenever necessary. We did this through a system of regular reports matching actual performance against approved plans and programs.

### *Performance Reports Show Costs Too High*

It very soon became apparent, on the basis of these consolidated performance reports, that costs were running far ahead of what they should have been in almost every area. The standard costs that had been set up in manufacturing and assembly operations were all that could be recovered in the prices of the products, and failure to meet those standards meant money out of our pockets. Just having these regular reports was in itself a tremendous stride forward.

But there was still something lacking. Management still hadn't learned the vital importance of cost control. Costs continued high above standards and improvement was painfully slow. In August, 1948, we began to make use of management meetings to show comparative performances in each of our various operations. In other words, the element of competition was introduced into cost control. Results were phenomenal!

By the end of the 1951 model year, manufacturing costs had been cut by some 330 million dollars annually compared to the level at which they were running in the second half of 1948. Our 1953 performance was the best in our history of cost control.

As costs were brought into line through better and better management, it was possible for us to become fully competitive in our prices and still realize satisfactory profit levels.

There was another very important phase of our financial progress throughout the past five or six years, which tied together the two main elements I've just discussed—organization and financial control. This was our profit center system.

### *Making A Large Business Into Many Smaller Ones*

Some years ago, Ernest R. Breech, our Executive vice-President, described decentralization as "the dividing of a large business into a number of smaller businesses, by type of product or by type of operation, and managing each smaller unit on an independent basis." That's exactly what has been accomplished.

By the end of 1949, our end-product divisions were ready to stand on their own—to order their own materials, schedule their operations and distribute their finished products. They were given wide authority to manage their own affairs and were held responsible for their own profit performance.

Some months later, the various manufacturing operations achieved the same status. Each of them was ready to be managed and operated as a semi-independent business in its own right. Each had not only the physical tools and facilities it required, but all the necessary management tools which were equally important.

By 1950, our profit center system began to pay off. It provided a strong incentive to divisional management to improve the efficiency of their operations, and it enabled management to recognize areas of greater profit opportunity, and to do something about them. As our decentralization program progressed, new profit centers were established. In many cases, a single large profit center was broken up into a group of small profit centers, such as individual plants.

Today Ford Motor Company has good financial control. We've been in a position for a long time to meet competition cost-wise and profit-wise.

At the same time that our operations were being revamped and revitalized in those areas I've already mentioned, the company was also modernizing and expanding its plants and facilities to get the capacity and the balance we wanted.

Ford has added 14 manufacturing plants of various kinds; has built six new assembly plants; and has established 19 new parts depots at key locations across the country. The company is building three new assembly plants, a new stamping plant, a new engine plant, and plan several other large-scale additions to existing manufacturing facilities. In addition, we have more than doubled our steel production capacity, added a third new ore carrier to our marine fleet, and modernized many of our older facilities.

Meanwhile, work is progressing rapidly on one of our most important projects, our new Engineering and Research Center. Scheduled for completion in 1958, this Center will give us engineering and research facilities among the finest in the world. We now have an engineering and research staff that is second to none in the world, and we're going to keep on improving it. That's one way to make sure that we stay out in front with our products.

In all, our expansion and modernization program during the past seven years has meant an expenditure of more than one billion dollars, and we are far from finished. New programs that have been approved will cost more than 600 million dollars additional during the next few years. All this is our own money. We haven't had to borrow one penny. Nor accept help from the government. The money has come entirely from earnings and depreciation accruals. That's another way by which a company can measure progress.

We are interested also in technological progress, in constantly-improved methods and processes that will yield greater productivity, higher quality and increased profits. We endeavor always to take advantage of new ideas and systems.

### *Automation Is Important New Production Concept*

An outstanding example is automation. Essentially, automation is the push-button factory. It provides automatic handling and machining of parts in progressive production processes. In brief, automation makes the machine do the work and saves men for better jobs.

Under the methods formerly used in our Dearborn Stamping Plant, two men at each press had to handle each part before and after the actual stamping operation. Today, in all of our stamping plants, the same job is done through automation, with mechanical fingers handling the parts between presses.

Another startling example of automation is the handling of castings such as motor blocks during machining operations. In our old Foundry Machine Shop at the Rouge, motor blocks, each weighing about 200 pounds, had to be posi-

tioned manually for machining. Today, in our new Cleveland Engine Plant, one machine handles 152 blocks an hour, holding them, turning them and positioning them automatically through every step of the machining process, untouched by human hands.

We're adapting this principle of automation to as many of our operations as possible because, while it calls for greatly increased investment in facilities, it pays off in lower costs and improved quality. Along with many other new processes, such as the use of radioactive isotopes for testing and analysis, it may spell the difference between success and failure in a really competitive market.

And we have attempted to follow progressive and realistic policies in our relations with the men and women who are our employees. The result has been a very marked improvement in employee morale and cooperation.

We were the first major company to adopt a non-contributory pension plan for hourly workers. We have attached a great deal of importance to ensuring similar pay for similar work. We have maintained a policy of promoting from within to the maximum possible extent, and we have made real progress in reducing layoff time during model changeovers.

### *Training Programs Help Company Morale*

One of our most important steps has been the expansion of our Company-wide training programs to qualify production workers for better jobs, and to provide us with a continuing supply of new and well-trained management personnel. This has been a tremendous factor in employee morale and has already had a noticeable effect on the caliber of our younger management.

Another important step has been our greatly expanded and improved system of communication between management and employees. Our experience has been that there are many benefits to be gained from a two-way exchange of information and ideas.

There's still a great deal to be done in the area of employee relations, but our progress has been unmistakable. There are clear indications that Ford men and women feel more secure in their jobs and are better informed about company policies and actions. Our human relations policy recognizes each employee as a human individual and attempts to treat him as such. As a result, they are working more efficiently and are contributing more than ever to production of quality products at low cost.

Today we have a top notch organization that has made and is still making industrial history. The awkward and stumbling colossus of 1946 has been broken up into a well-knit, closely coordinated team of semi-independent businesses operating with a minimum of Central Office policy control and guidance.

Though our decentralized organization is still young and growing, all components have achieved much greater efficiency in planning and execution of operations. By delegating both responsibility and authority, we have built up our management strength at every level and, to a great extent, relieved our staff executives of the details of operating responsibility.

END

## Organization Demands Flexible Stability

The problem of stability in organization is one of maintaining a loyal group of staff members who work together effectively. While this effectiveness is in part a question of tenure, this question in turn is one of maintaining those conditions which provide satisfaction and opportunity on the job. Promotion from within contributes to stability, as well as effectiveness in training, so that new employees become oriented to their tasks and become productive quickly. . . .

Changes in organizational structure from time to time are necessary and should not be avoided. An organization is a reflection of the marketing task, and if the task changes materially, so should the organization. If investigation indicates the need for a change, it should be made with little hesitancy, for the old organizational structure has probably become an inefficient instrument in view of new demands upon it. One of the most common errors of top management is to become too conservative in regard to organizational changes. Sometimes the need for changes is not recognized. At other times an automatic adjustment to new conditions is somehow expected but usually fails to take place. There is a personnel problem involved because a change in organization means a disturbance of existing relationships between members of the group. Responsibilities and authority are shifted around among people, perhaps to the disadvantage of some, the advantage of others. Because of this fact, changes should not be made capriciously or without proper investigation. This suggests the desirability of periodical review to determine whether the company's organization, all things considered, is doing an effective job, and, if not, whether the reasons for failure are those of structure, ineffective coordination, poor morale, or incompetent personnel. . . . by Dudley Maynard Phelps, in "*Sales Management: Policies and Procedures,*" pp. 369-70, published by Richard D. Irwin, Chicago, Ill.

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# What The Staff Function Actually Is

*by Ralph C. Davis*
*Professor of Business Organization*
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**Any business structure contains three objectives: the organization's objective, which is to acquire, produce, and distribute a product of value; the owner's objective of profit; and the staff's objective of what they receive from the operation. This clear article outlines the functions of leadership obtaining in the second business objective, and points out important underlying principles and policies.**

THE staff function is interesting and very broad. It includes some of the most important and most difficult problems in business organization.

It is necessary to lay down a few fundamentals before we can answer any questions. It will be necessary to develop some mutuality of understanding concerning the nature and requirements of business objectives, leadership, policies, functions and organization structure. We must determine the significance of the line organization before we can determine the requirements for effective line and staff relationships. Other organizational factors and problems affect the staff function.

The mission of the business organization is to acquire, produce and distribute certain values. The business objective, therefore, is the starting point for business thinking. The primary objectives of a business organization are always those economic values with which we serve the customer. The principal objective of a business man, naturally, is a profit. And a profit is merely an academic consideration, nevertheless, until we get the customer's dollar. We must bear this in mind in looking at the staff function, because all organizational groups, whether line or staff, must contribute values that make possible the accomplishment at a cost that will leave a reasonable profit.

A profit may be a necessary and important business objective, but it is not the primary objective of the business organization. It is a personal objective of owners. The employees of the organization also have their personal objectives. There are, in addition, certain community values and other social values that the organization must contribute. These are what I call Collateral objectives. They are values, chiefly, that the members of an organization expect to get for themselves. The basis of the morale development is an integration of these personal interests with the primary objectives of the organization.

The values in which we are most interested, in this discussion, fall in a third classification. We may call them Secondary objectives. They are secondary in incidence of service to the customer, but not necessarily in importance or necessity. These secondary objectives are values that the line organization needs to do its job. It is largely the mission of staff groups to contribute such values. There is little justification for staff unless it can.

The primary objectives of the organization are determined ultimately by the customer. The collateral profit objectives of the organization may be determined ultimately by owners, investors, the economic forces of the market place, governmental intervention in private enterprise and other forces beyond the control of its executives. Other collateral objectives also may be determined ultimately by forces that are external to the business organization. The determination of the organization's secondary objectives of economy and effectiveness are within its control to a greater degree, but not entirely. These secondary objectives are significant in this discussion, because they become the service objectives of staff groups, to the extent that staff responsibility and authority for their accomplishment are delegated to these groups.

Objectives do not determine themselves. Customers and other outside groups will not determine them for the organization. The immediate responsibility for their determination falls necessarily on the organization's line executives, at every level, with the advice and assistance of staff. The determination of organizational objectives, in other words, is a responsibility of leaders.

It is necessary, in consequence, to indi-

cate briefly the place of leaders and leadership in our problem. The leaders in a business organization are, or should be, its executives. They are employees of the owners, in most concerns, quite as much as any operatives. These executives may be line or staff, and of various grades and ranks. It is possible to have a sufficient complement of competent, experienced executives, and no leadership. Management is the function of executive leadership. The executive group may be operating through a good organization structure, using sound managerial procedures, and still we may have no leadership.

### Leadership Is The Catalytic Agent

What is leadership then? The term suggests to the speaker a coordinating and motivating force that acts as a catalytic agent in relating the activities of the organization, and the interests of owners and employees, to the accomplishment of the organization's primary objectives. It is a psychological factor in group accomplishment, rather than a functional or personnel factor. It is evident, therefore, that we may have a well-developed staff group, which is related properly to a line organization in support of line activities, and still lack an effective staff leadership of ideas in the particular area of specialization. This is possible even when the executive head of the staff group is competent professionally.

It is necessary to go one step further. Principle is the basis of policy. A principle may be any verifiable truth that sets up a significant, meaningful relationship between cause and effect. The end effect of business operations is value that the organization can sell; the cause of value is work. Work can be mental or it can be manual. The significance of function (work) depends on the fact that values do not create themselves—they are created.

Business Functions may be classified vertically by divisions of the organization, both line and staff. We recognize sales functions, production functions, finance functions, etc. They may be classified horizontally, by echelons, as managerial or operative functions. We are interested, of course, in management which is basically a mental activity. It has its routine phases to be sure, but it has to do chiefly with the mental work of leading others in the accomplishment of group objectives. Operative functions often involve more physical than mental work, but not necessarily. The principal distinction is that operative functions do not involve the direction and supervision of others, with the responsibilities of leading.

### A Necessary Distinction Between Functions

This distinction between managerial and operative functions is necessary for an understanding of staff functions. A staff function is an evolution or outgrowth from primary line functions at some level of the organization where it can be most effective. Staff evolution represents largely an attempt to maintain the economy and effectiveness of line operations, with organization growth, by developing a division of managerial work and consequent managerial specialization. The result is, in a manufacturing establishment, groups that are giving staff support to line executives in such areas as marketing research, industrial research, production control, purchasing, industrial relations, engineering and others. Such staff groups assist the company's line organizations in creating or distributing values that the customer needs, and for which he will pay. It does so by contributing values that the line organization needs to do a job of creating customer values. It follows that any classification and development of staff functions must rest on a logical classification and analysis of basic managerial functions.

### Staff Organization Result of Evolution

We have noted previously that a staff organization is a result of an evolution and separation of certain functions from a line organization. It might be helpful, therefore, to look briefly at the problem of line development. Someone sent in this question: "How do you account for the rapid increase in the number of staff personnel in relation to line?" A prior question would be, obviously: "How do you account for the growth of line organization in the first place?"

We should define briefly what is meant by line so that we can distinguish it from staff. The line hierarchy of functions extends downward from ownership and ends in some grouping of operative functions that makes possible a division of labor and primary specialization in the creation or distribution of certain salable values. There is a scale of responsibility and authority that is correlated directly with this hierarchy of line functions. This scale is what is known as the primary chain of command. But there is a chain of people who exercise authority in the discharge of their responsibilities for the proper performance of line functions at each operative and managerial level. This is the line organization. There are only two basic forms of organization structure: line and staff, so what is left, after we subtract line, is staff.

This development as presented here is obviously an over-signification. The line organization goes through certain definite stages in its growth and development. There are certain managerial and operating difficulties that are associated with each stage. The initial separation of a staff function may be due to the development of some of these difficulties in the line organization. It follows that an understanding of the line organization and its problems is necessary for an understanding of the staff function and its organization.

### How to Distinguish Between Line and Staff

We have now a basis for distinguishing between line and staff. A primary chain of command leads directly to operative specialization in the creation or distribution of customer values. It is a staff organization if it leads to specialization in the creation or distribution of values that I cannot sell. They must be values that are needed by the organization or its members, or they are not needed at all. We do not sell people in a manufacturing business, for example. We sell products. Nothing can be made or sold, nevertheless, unless our personnel department supplies people who are trained, who are cooperative, who know what they are doing. The personnel department supplies, of course, many other important values that the organization needs.

There are seven or eight stages in the downward growth, or devolution of the line organization. Such devolution is an effect of growth in business volume. The initial stage is the stage of complete integration of all functions in the line. It is personified by the push cart peddler in any large city. It is possible that he may develop his business over the next twenty or thirty years into a modern department store. Its various functions in embryonic form must have existed in the original push cart business. If our merchant be-

comes the head of a great department store chain, the great load of work will make it necessary for him to differentiate various line and staff phases of the work, to delegate responsibility, and to set up various line and staff groups for the performance of these phases. So it is possible to start with a one-man operation and wind up with a multiplant operation. It is obvious that between zero and General Motors there is a lot of staff that has to develop. The relations between line and staff become increasingly complex, increasing the difficulty of coordination. This is part of the answer to the question, "How do you account for the rapid increase in the number of staff personnel to line?"

### Are Sales, Finance Line Functions?

This problem of distinguishing and defining what the line organization is, is common to most organizations, apparently. I am often asked: "Do you regard sales and finance as line functions?" Yes, I do. There is another approach to this problem that might be helpful to you. It is this: The business organization is an economic institution. Its primary mission is to furnish customers with goods or services of a satisfactory quality, when and where they want them, at a price that they are willing to pay. It is our problem to keep our expenses below our net income sufficiently to leave us with a reasonable profit. The utility of your product is obviously its ability to satisfy the needs and desires of the company's customer. If your competitor can satisfy those desires more effectively and at less cost than you can, then he will get the business and your competitive position will suffer accordingly. The quality attributes of your product, or service, are those characteristics which give it the required utilities. We cannot produce goods or get them into the customers' hands without capital. It is a basic factor in business operations.

It is evident that the organic functions of any business organization are (1) the creation of the required utilities in whatever goods or services we sell, (2) the distribution of these goods or services to our customers, and (3) the provision of the capital without which the first two functions can not be performed. The significance of these organic functions is that all line and staff functions develop from them. They represent usually our primary divisions of the company. The chain of command that extends from the head of one of these divisions to primary operative performance is obviously a primary chain of command. These organic functions in a manufacturing business are production, distribution and finance. Our vice-presidents in charge of production, sales and finance are line executives. Each of them may have considerable supporting staff.

### Line Organization Is Devolved From Ownership

We have seen that a line organization is the result of a growth downward, or devolution, from ownership. It results in a division of and specialization in primary operative performance. We may group primary "making" or "doing" functions in the manufacturing division of a concern engaged in job order production, for example, to form a milling machine department, a lathe department or other primary departments. We may group primary operative functions, in a large concern that is engaged in continuous manufacturing, on the basis of product made. We could be organized in an automobile concern, for example, on the basis of production lines in parts plants, and assembly lines in assembly plants. The larger the organization, the more such primary operations will require staff support, regardless of the type and kind of business. Staff functions may be any functions that have been separated from the line for the purpose of assisting line executive leadership in the performance of its managerial duties primarily.

### Effect of Growth On Staff Groups

As we grow, we may have to differentiate work from the older staff groups and to set up new staff departments. The old staff groups continue to grow. We organize new staff groups to serve managerial needs that have not existed previously. One might assume that the growth of staff organization would limit organizational growth because of the expense. This has not been the case. This may be due to the contributions of staff to operating economy and effectiveness with line. It may be due to the application of work simplification, cost reduction and mechanization to staff operations. We have completed recently a preliminary study of staff-to-line ratios. It indicates that all staff groups do not grow at the same rate. There are some that grow faster than the line organization. These, in general, are staff functions that have to do with technological progress—engineering, research, etc. Other staff functions that have to do largely with economic and social factors and forces tend to grow on a one-to-one basis with the growth of line organization. Examples of such functions in a manufacturing business are purchasing, personnel, and production control. The ratios of staff to line personnel, within the latter group, tend to be fairly constant. For example, the ratio for Purchasing was found to be 1.0/100, for Personnel 1.4/100, for Accounting 4.6/100, Time Study 1.1/100, and Production Control 2.5/100 in organizations up to 3,000 employees in size. These are provisional figures. They indicate average staff manpower relationships. They are not applicable to a particular industry. The inferences drawn above appear to be reliable, however. Similar data for an industry or a company are helpful in staff organization planning.

### "Growing Pains" Involved In Line Specialization

It was noted previously that line devolution progresses through certain recognizable stages, with the growth of the organization, as a division of line work and line specialization became increasingly necessary. There are certain organizational "growing pains" that tend to be associated with each stage. Recognition of the particular stage of line devolution is a step in the diagnosis of organizational problems.

The same thing can be said for the growth and development of staff functions. Both line devolution and staff evolution start theoretically from the same point; the complete integration of all functions initially in the person of the owner-manager-operator of the one-man business. It may be possible, actually, to start in business on a larger scale, of course. The development of a staff organization also goes through certain recognizable stages, with organization growth but they are quite different from the line stages. Certain staff organizational problems tend to develop with the development of each stage. These stages are (1) line integration in which all functions are performed by the line, (2) distinct staff differentiation in which we separate certain operative phases of a staff function for assignment to a staff operative, (3) complete staff differentiation in which we set up a section or other organizational element under the com-

mand of a minor staff executive, (4) staff integration in which we bring together a number of staff departments in a staff division, (5) staff elevation in which we separate the administrative phases from the operative phases of the staff function in setting up a headquarters staff group, (6) staff decentralization when some parallel staff development becomes necessary with multiplant operation, and (7) complete staff separation, when the function becomes an autonomous operating organization as in the case of the General Motors Research Corporation.

### *Is There More Than One Type of Staff Function?*

There is the following question: "Is there more than one general type of staff function?" The answer is: Yes. We have noted above the reason why we set up staff in the first place: It becomes necessary to provide the line executive with assistance in carrying the load of managerial work, and to develop specialists in certain phases of it. Common sense says that the basis for any classification of staff functions must be the basic functions of management. There are three basic management functions:

1. *Planning*, which determines an effective, economical basis for the accomplishment of designated objectives. The resulting plan is expected to give some practical answers to such questions as what, how, why, where, and who.

2. *Organizing*, which sets up the basic conditions underlying the successful execution of the plan. These conditions may include new plant and equipment, changes in plant layout, organizational changes and many others. This is where line and staff come together. Staff works with line in organizing for the execution of the plan. At some point, however, line must take over from staff, and begin to operate. Otherwise, we shall never get results. It is the line organization that produces and distributes salable values.

3. *Controlling*, which constrains and regulates the action of the organization in accomplishing the designated objectives according to plan.

We have two principal types of staff functions and groups: technical staff and coordinative staff. The first type assists us in creative planning or supplies some technical staff service of facilitation. They engage chiefly in developing ideas and coordinating thought with respect to the solution of problems within their assigned fields of specialization. The engineering department, for example, is usually a technical staff organization for product development and design. Coordinative staff groups assist the chain of command to which they are attached in controlling operations. They are concerned largely with coordinating action. The writer knows of no permanent staff organizations to assist in organizing. The reason is, I think, that this is the area in which line takes over from staff and begins to operate the plan. The technical staff group that develops the plan, or some phase of it, usually works with the line in its installation. We may set up a temporary "task force" group, however, for major installations.

A fair question is: "Does the staff do all the thinking?" Hardly. Most companies do not encourage the notion of a staff aristocracy of brains. It is not the way to win friends and influence people in the line organization. The ultimate responsibility for results rests on top management. It is a sufficient answer, perhaps, that every staff executive reports to some higher line executive, either directly or indirectly.

It is frequently a question as to what duties should be assigned to a particular staff group. The problem is not too difficult if we remember that a staff organization may be attached to a line organization, but it is not a part of the line. A staff organization may advise or assist the line, or other staff groups. A staff executive, accordingly, has no command responsibilities, except for the staff group that he heads. The basic staff functions, therefore, are those of investigation and research, analysis of facts and information, the interpretation of plans and policies, assistance in the formulation of plans, assistance in organizing, assistance in control, and services of facilitation. The specific duties depend on the objectives that are set up for the particular staff group.

### *Should Staff Man Ever Perform Line Duties?*

The following question has been sent in: "Should line duties ever be assigned to a staff man? If so, what duties and why? Does the staff man cease to be a staff man and become a line man?" The assignment of line duties to a staff man would require also a delegation of line authority to him. This would violate the principle of single accountability, in the case of line subordinates. So, my answer is "No." There is a form of organization that has been called a "functional" relationship or functional organization. In this form, a staff group has line authority for problems in its field. It is not a distinct type of organization in itself. It is, rather, a relationship of authority and responsibility between staff and line. We do not give line duties and authority to staff people, usually, unless there is some unusual and peculiar situation. It has been done in connection with some very highly technical phases of Quality Control, for example. The number of such instances is very limited, however. When we break down the idea of single accountability, it becomes difficult to hold the line executives accountable for results. We do not want to do anything that may relieve line executives of their responsibility for producing salable goods or services of the required quantity and quality within the required limits of time and expense.

Finally, there are a great many problems in staff organization that may develop with the growth of a company. They may have to do with the failure of staff to get line support for plans, staff domination of line functions, insufficient or ineffective use of staff by the line organization, and many other difficulties. Such problems must be solved, because profitable business growth depends more and more on staff assistance and advice as the business becomes larger and larger.

Here a thorny problem arises: "How can the manager or company protect the line supervisor's authority when the staff man knows more about the job than the line man?"

I have had at various times the reports of six teams on this major question.

Each of the reporting teams had a valuable contribution to make in commenting on this extremely delicate issue, and I have combined their statements into four salient points.

Their solutions sum up as follows: (1) Develop the line organization to the point where it will have the prestige and the position to speak on equal terms with staff. (2) Clearly state the philosophy of management, including a clear definition of the relations between line and staff. (3) Develop the background and knowledge of line executives to the point where they can evaluate staff proposals with respect to organizational objectives, policies, and procedures. The line executive does not need a highly technical knowledge of staff problems. (4) Develop mutual confidence between line and staff. They should recognize that one complements the other, each contributing what he has to contribute to the organization's objectives. END

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# Evaluation of a Unique Two-Year Executive Development Plan

*by R. D. MacTavish*
*New York State School of Industrial and Labor Relations, Cornell University*

**This article is taken from an unusual study of a large American manufacturer's plan for executive development. The study is a brief, objective, absolutely basic outline of the factors that go to make such a plan workable. The Bigelow-Sanford Carpet Company's plan was already in work when it was studied. This is how it was approached, dissected, and finally evaluated.**

• **Purpose:** The primary objective is the evaluation of the pilot-experimental two-year program of executive development conducted by the New York State School of Industrial and Labor Relations at Cornell University, with the cooperation of the College of Engineering, Cornell University, for the Amsterdam, New York plant of the Bigelow-Sanford Carpet Company, Inc.

The secondary objectives are to obtain increased knowledge and understanding of the philosophy and techniques of executive development; to become more intimate with other industrial programs of executive development.

• **Nature of the Immediate Problem:** The Bigelow Institute of Industrial Management was, in reality, an "industrial university" program, consisting of three major phases over a two-year period, supplemented with research study. Phase I, given from September, 1951 to June, 1952 and Phase II, offered from September, 1952 to June, 1953, consisted of a curricula of fifteen major areas from the fields of industrial management, labor relations, and administrative engineering. Phase I and II were conducted within the plant property at Amsterdam. Phase III was a three-day finale, the "executive workshop seminar," conducted on the Cornell Campus at Ithaca, during June, 1953.

The two-year executive development program was specifically aimed at developing a total of twenty-two Bigelow executives to higher levels of performance.

Five basic objectives were formulated for the Bigelow Institute of Industrial Management: (1) to promote and foster self-development and self-improvement in the field of industrial management within the Bigelow management staff; (2) to provide an opportunity and means by which such development and improvement can be attained; (3) to develop in the Bigelow management staff a practical working knowledge of modern management techniques; (4) to develop and foster an understanding and analysis of the social and economic problems involved in the management of a manufacturing plant; (5) to develop a management staff which is trained, objective, self-reliant and alert to the changing industrial picture.

The question then is, "Were these twenty-two Bigelow executives developed to higher levels of performance as a result of their experiences as participants in the Bigelow Institute of Industrial Management?"

• **Method:** As textbooks are a rarity in the field of executive development, professional and trade journals were searched for their articles of experience and practice in the field. Individual industrial companies were solicited for their reports of studies, programs, and forms used in developing their executives.

Conferences were held with Bigelow and Cornell officials who participated in the planning, organization, operation, and control of the Bigelow Institute of Industrial Management.

The first step was an inspection of the plant while it was in operation.
After becoming oriented he observed each institute member in action within his plant location. Interviews were held with all participants. Follow-up interviews were necessary in many instances. Other interviews were held with the participant's employees and their bosses.

General and specific information was collected and collated over a two-year period.

Testing devices, including the "Adaptability Test, Form A," by Tiffin and Lawshe, the "Verbal Reasoning Test, Form A," and the "Abstract Reasoning Test, Form A," of the Differential Aptitude Tests by Bennett, Seashore and

Wesman, and the "Supervisory Situation Survey" by Nelson, were used in the institute program.

Questionnaires and opinionnaires provided much data of value in the administration of the institute.

Records, reports, files, and company log books were used when deemed advisable. The Evening Recorder, Amsterdam's newspaper, provided the writer free use of their microfilm files.

CIO, TWUA Union Local No. 1's members gave freely of their knowledge of labor conditions at the Amsterdam plant of Bigelow-Sanford.

Basic research techniques with institute members were: interviewing of non-directive nature, non-participant observation in plant operations, committee meetings, conferences, classroom discussion, and various objective measuring devices.

• **Findings and Interpretations:** On the basis of statistical facts as collected from the professors and instructors of BIIM participants, long-service, non-college men have proven that they can handle satisfactorily an intensive, university level education as offered by the institute while holding down their regular jobs providing that the industrial university moves into their plant.

Furthermore, that foremen, under the conditions of this institute, are capable of executive development in companies with departmental superintendents. This statement is substantiated by the overall average of 84.5 for the superintendents in the two-year BIIM program, and 79.5 for foremen. This variance is not so important when compared to the tremendous advantages offered by association of the men in the diagonally vertical structure of management.

Evaluation disclosed that BIIM participants credited the Bigelow Institute of Industrial Management with reaching its original objectives in the following sequence: (1) to develop in the Bigelow management staff a knowledge of modern management techniques; (2) to promote and foster self-development and self-improvement in the field of industrial management within the Bigelow management staff; (3) to develop a management staff which is trained, objective, self-reliant and alert to the constantly changing industrial picture.

On the other hand, evaluation disclosed that BIIM participants sincerely believed that the Bigelow Institute of Industrial Management had failed to reach the following aspects of its overall objectives: (1) to acquire practical working knowledge; (2) to progress through change in industrial methods and procedures; and (3) to express one's ideas and thoughts clearly.

An analysis of these results demonstrates that BIIM members acquired a theoretical knowledge of modern management techniques, but the professors failed to show them how to apply them to the carpet industry. They failed to draw examples from, and to make analogies to the carpet industry in the teaching of the technical subject areas. Sufficient time spent in the planning stage of BIIM should have been taken to insure that instructors possessed a working knowledge of the carpet mill at Amsterdam, in addition to carpet operations in relation to their specific subject matter areas to be taught.

BIIM men are cognizant of their own self-development and self-improvement over the past two years. They are making every effort to practice what they have learned through the institute. These factors are great achievements to be credited to the Bigelow Institute of Industrial Management.

Three months after the Bigelow Institute of Industrial Management had been completed evaluation results disclosed that BIIM participants had developed in the following manner:

They possessed breadth of vision.

They developed new viewpoints to old methods and procedures.

They were extremely grateful for the opportunity for guided experiences for two years, and believed in the value of an executive counselor.

They were aware of an intangible growth through their association with BIIM participants and their group participation in formal class sessions.

They had developed an open-mindedness from former prejudices.

They had been stimulated into serious thinking about technical matters of carpet production.

They had developed the inner feeling for the need of mutual cooperation in solving plant operational problems.

They had developed self-confidence in their leadership of their men.

They had developed a willingness to share their problems with others in the search of the best solution.

Through executive development they rebuilt their personal convictions about many philosophical things.

They acquired a human relations approach.

Through a change in the work climate and their attitudes the atmosphere surrounding their offices had changed, and they were in the wake of a new experience at the Amsterdam plant.

Employees of BIIM participants saw obvious improvement in their boss to consider the ideas and feelings of those working under his supervision and leadership. Employees also saw amazing improvements in the operations of their sections. Employees and associates were alert to the fact that the institute program had been exposing BIIM men to other areas of industrial management, and that the BIIM men had acquired a better understanding, and realization of other person's work, problems in the Amsterdam carpet mill as well as problems facing top management in New York. Employees as well as others in the Amsterdam plant executive staff would welcome the opportunity for executive development.

Evaluation of BIIM by the chiefs of BIIM participants revealed that all bosses were impressed with the Bigelow Institute of Industrial Management, and remarked that their men gained a great deal of knowledge from the two-year program. How much learning they acquired was a relative matter and extremely difficult to evaluate. But, in a comparative analysis with the objectives of the institute they believed it to have been a success. Bosses said that it should be repeated for other qualified members of the Amsterdam executive team, both line and staff.

It is possible to evaluate the success of the program from the interest being shown by Amsterdam plant executives seeking opportunities for selection in the next Bigelow Institute of Industrial Management.

Bosses have observed growth and maturity in their men over the past two years of executive development. They believe that the men have a wiser understanding of Bigelow top-management's problems.

The Amsterdam plant manager said that the greatest changes were witnessed in the men's attitude toward, and handling of labor relations.

The plant manager honestly felt that it was too early to try to evaluate the Bigelow Institute of Industrial Management, however, he personally, was of the opinion, that the men in BIIM had responded to development, and had acquired a wiser understanding of Bigelow's management problems. He would be in favor of a repetition of the institute at a later date.

The evaluation proves that Bigelow, leading the way, has discovered a way to develop today the executives that it needs for tomorrow's business. END

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# Applying Scientific Management To The Office

*by E. W. Jochim*
*General Manager*
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**Much management literature today deals with scientific principles as they apply to top or middle management. Here is an article dealing with their application to office routine. The author gives dynamic statistics proving that from office machines to personnel relations, the office routine workers' numbers have grown into a tremendous force. What manufacturing firms are doing, the writer points out with reference to both past and present**

SCIENTIFIC management applied to the office is virgin territory, waiting to yield rich rewards to courageous explorers who will push back the frontiers.

Many management men have had some accounting background. They will undoubtedly concede that it is the bottom line that counts, which is why we should look at the record showing the vast growth in number of office workers.

1. While factory productivity has increased an average of some 3 per cent per year for many, many years, the number of office workers per 1000 factory employees has doubled in the last 25 years alone.
2. For every one of our millions of productive farm workers, there is an office worker.
3. Over 12 per cent of all workers in the country today are office workers.

Add to that 12 per cent the per cent in government services, the ever-increasing per cent entering the national working force later in life, (and rightly so, because they are taking advantage of our fine educational opportunities) and the ever-increasing per cent of our total population in the retired class, and you have the *challenge*.

Obviously we in America cannot continue to maintain our present standard of living, much less increase it, unless every member of the national working force is steadily increasing in productivity at least equal to the increased burden being steadily placed on the working force.

Scientific management continuously, consistently, aggressively applied to all areas of work is the only answer to this challenge.

When I first started trying to improve factory operations, each foreman I worked with agreed in principle with what I was trying to do. But almost invariably he ended by saying, ". . . But that doesn't apply here — the work in this department is different." When I had occasion to move from plant to plant, I met the same response—at first. But the basic principles of work are the same wherever work is done. Office work is but another form of *work*, and the same principles apply—only the details of application differ. This is in no way disparaging to office groups. I only point out here that the scientific method applies to janitor as well as president, and to everyone in between.

Equally important to the realization that scientific management applies to all work, is the understanding that it is a complete entity—like a diamond. Like a diamond, scientific management has many facets, each interesting and valuable in itself. All of the facets combine to make a priceless jewel. Now, if a diamond is cut into several smaller diamonds, all of the smaller diamonds are still very valuable, but not as valuable as when they were one complete diamond. In the same way, scientific management is valuable when some of its facets are applied to work. It is most valuable when all of its facets are applied. In other words, it must be applied to everything associated with the work, not just to a single, isolated part.

## *Some Facets Are Already In Use*

We are seeing encouraging evidence that some of the facets are being recognized and applied, with good result. For example, there is an ever-increasing number of offices attractively decorated, using acoustical ceilings, with some 35- to 50-and-more-foot candles of well-engineered lighting, even functional furniture. Fine, but what of the equipment? While factory equipment averages over

$10,000 per employee, it is doubtful that office equipment averages $1,000 per employee. Admittedly, much of the gain in factory efficiency has been the result of substantial capital investment. Similar gains can be made in office efficiency by substantial capital investments. But capital investments of themselves will not necessarily bring greater productivity. Unwise investments could even cause disastrous losses. Investments can only be profitable when they are the end-result of effective equipment research, methods and procedure planning, intelligent personnel planning, economic study—in short, proper coordination of all the facets of scientific management.

### *Office Equipment Is Developing Rapidly*

Many of our office equipment manufacturers have already accomplished much in this research and are proceeding at an increased tempo toward further invaluable developments. True, costs of this equipment at present are terrific, but further engineering will reduce the costs into a workable range much faster than we will be prepared to apply these new machines. Given sufficient time, manufacturers perhaps will come into the various places of business and work out the installations. But we do not have that much time. We must reach out to the manufacturers, to make them acquainted with our needs, to help them "debug" the newly-developed machines and actively cooperate in the application of these machines to our work. We must do this as a matter of self-preservation. In the words of a much quoted Society for Advancement of Management axiom, ". . . no war, no strike, no depression can so completely destroy an established business or its profits as new and better methods, equipment and materials in the hands of an enlightened competitor."

One does not need to be a prophet to state that office work is in the early stages of a technological revolution as far-reaching, unescapable, dramatic and ultimately beneficial as were the results of the first industrial revolution. Electronic equipment already developed and yet to be developed will completely change the complexion of all offices. While some of this equipment can be fully used only in larger offices, the pressure of its completion will force development of new, more efficient, non-electronic, automatic and semi-automatic equipment. This equipment will be designed for a low price through use of cheaper materials, even if the materials must be developed, and with such efficient manufacturing that hardly any office can afford to be without them.

For example, a short time ago (February 25 and 26, 1954) there was a very successful scientific management conference at the Hotel Astor in New York City, to review the system of U. S. Steel Corporation has evolved for mechanizing clerical routines. The announcement stated: "The system links typewriters, calculators and other office machines to automatic and electronic machines. Costly data-duplicating and copying are eliminated.

"Companies with as few as 350 employees may now use the five-channel punched tape to set up production lines for processing data. Recording and processing of repetitive information on output, sales and warehousing are faster, more accurate, cheaper. Flexibility is assured. Full profit may be taken from present electronic computers. Improvements may be added as soon as they appear, without radical revision in methods or swapping whole lines of present equipment."

Electronic equipment has been built on a production line basis for a few years now. Some models are made to sell for under $10,000, and occupy a space smaller than the ordinary office desk. But we must remember, as Harold F. Smiddy, vice-President of General Electric Company, put it in his recent paper in ADVANCED MANAGEMENT, (Jan. '54, p. 20) "The mechanical brain and similar machines can destroy human values or enable men to realize them as never before."

### *Facets of Scientific Management Interlock*

Now let's take a look at an example of the interlocking nature of the various facets of scientific management.

Much of our current office personnel problems of absenteeism, turnover, lack of interest and initiative, failure to attain reasonably expected consistency in quality and quantity of work, arise from the monotonous, tedious, uninteresting jobs we have created in our search for better office methods and procedures. Now is the time to plan our developments to provide for recognized and proven human wants and needs. The need, for example, for an employee to feel that he is doing worth-while work, that other people recognize he is doing worth-while work; the needs for opportunities for self-expression, for recognition and for advancement. The office workers of the future will be technicians, not clerks. It is high time we start training qualified employees for this transition. Students, our future office employees, must be oriented and trained in this direction.

The future office technician must have a much deeper knowledge and understanding of the use and application of many forms of mathematics. But then this need for more, and more, and yet more mathematics is not peculiar to the developing office technician. It applies to every worker with increasing degree with the passage of time, with the maturation of developments that are not yet even a gleam in the inventor's eye. Men, even those just out of college, will find it necessary to brush up on their mathematics, some to the extent of post graduate courses. This need will be felt by management men and factory workers, as well as technical and professional employees.

### *Mathematical Data Is Of Prime Importance*

Many costly errors have been made because the people processing the data did not understand the mathematical principles they were applying. Many costly errors have been made because executives did not understand the mathematical theories of the data upon which they were basing their decisions. Now let us estimate our coverage. So far we have reviewed:

1. The need for scientific management in the office.
2. The fact that scientific management covers all work.
3. The necessity for using all the facets that go to make up scientific management, not just certain facets.
4. Some of the changes that scientific management will make in the offices.
5. Some of the things we must do to prepare for, and to maximize the benefits from, these changes.

These are fundamental points. But what of the philosophy and principles of scientific management, that enable it to apply to any problem at any time, in any place? We want the multiplier because we know that in this dynamic age anything that has been done is already obsolete.

What then is the basic objective of

scientific management? Some 50 years ago, Frederick Winslow Taylor, the father of scientific management, stated that its basic objective is "to secure the maximum prosperity for the employer, coupled with the maximum prosperity for each employee." This statement was, of course, meant very broadly. Some of our modern management philosophers prefer to state that the objective is to supply a product or service. The danger here is to go off on the "which came first, the chicken or the egg?" tangent. Obviously, if a product or service is not rendered, there can be no prosperity for either employer or employee. On the other hand, if the product or service is rendered at a loss, the business itself will soon cease to exist.

## Four Basic Points of Management Philosophy

Mr. Taylor stated that scientific management, in its essence, consists of a certain philosophy, which results in a combination of the four great underlying principles of management:

1. The development of a true science.
2. The scientific selection of men.
3. The scientific education and development of men.
4. The continuous, intimate, friendly cooperation between the management and the men.

The first principle, "the development of a true science," recognizes that there is one best method at any one time of performing any element of work, mental and physical, or in combination. The know-how of the men and the literature must be analyzed, the bad motions, or methods, or practices, eliminated, the good adopted. Then practical research must be planned and carried out to determine any additional facts necessary to complete the one best method for that element at that time. Management and men must then work together on each element of work to substitute this one best method for old rule-of-thumb methods. This, of course, includes an analysis, for example, of what should be done, as well as how it should be done. Who, for example, uses the report, how is it used, who makes the report, etc.?

Scientific management is not yet making the contributions to forward progress it can make. We have not had enough philosophy, enough people who think in terms of principles rather than facts and procedures and applications. Professor Stevenson of Columbia University states that "the scientific method, stemming from Descartes, so adequately described by Karl Pearson at the close of the nineteenth century, so usefully employed in the development of twentieth century science, is a valueless instrument. It is atomistic in the sense that the whole can be explained by an understanding of the parts, whereas we must observe the behavior of the whole to predict the behavior of the parts."

## Both Methods Are Needed; And More of Them, Too

In my own opinion, both methods are needed, and much more of them. Granted that management operates more effectively today, does it actually operate more intelligently? True, we have learned to use detail, have invented ingenious methods to proliferate not only the detail but also the methods, with good result, even to an amazing degree; but look what happened to our administrative overhead!

Much good work along this line is being done by our methods, systems and procedures engineers, and by plain John Doe. This work can be immeasurably expanded to secure wonderful results. The cost regarded by itself would, of course, be large. Compared to the result, the cost would be amazingly small. In fact, the "work simplification program" method offers the quickest results and, more important, continuing results. Probably the other requirement of this principle, machine and equipment research will, for practical reasons, be carried out largely by the manufacturers in the future as it has in the past. We have already discussed the need for significant expansion of this research. Greater interest and cooperation with these manufacturers by the users of this equipment would encourage, even force, this additional development work, as well as expedite it.

## Discussion of Taylor's Important Second Principle

The second principle, "the scientific selection of men," recognizes the differences in men, the physical, mental, psychological, educational and environmental differences. Every man, regardless of how good he is, cannot even do every job, let alone do every job well. However, every man, except those too sick or too lazy, can be first class on some job or jobs. Management's obligation here is to place each employee in a job in which the employee can be first class. Our new techniques for determining these physical, mental, psychological, educational and environmental differences greatly help our efforts to guide the "square peg into the square hole and the round peg into the round hole," as the saying goes. Here again we have only scratched the surface. Much more research is needed. Just as important, better application of this research to our daily problems must be developed. For example, the critical shortage of trained industrial psychologists continues to create a happy hunting ground for the money hungry opportunist. The money and effort directed by incompetents is worse than wasted; the disgraceful results act as a drag on progress, even to the point of placing capable professional men on the defensive. The victims of these charlatans could usually have saved themselves by a little scientific management analysis of the panacea offered. When they lose faith they remind me of the safe blower who found a sign on a safe he was about to rob: "Don't blow up this safe. The door is open, just turn the knob." He did that and it released a brick that fell and hit him on the head and set off an alarm. As the police took him away, he said: "That's the sort of thing that made me lose faith in human nature."

## Is There a Shortage of Real Management Talent?

We continuously read and hear about the shortage of management talent. Is there a real shortage, or are we simply unable to recognize management talent? Certainly, in all honesty, we must admit that in far too many cases we cannot recognize, even over a period of time, what is not management talent!

Charles W. Morton, in the August 1952 *Atlantic Monthly*, stated in part, "Many organizations harbor, in varying quantities, executives who are known to be not quite bright. What has been written about executives has usually dealt with the hot shots." He went on to state examples, of which the following is typical:

"*Vaguely*—personnel man in a vast organization, Vaguely could never make up his mind about anything. Timid, seclusive, he sought escape in a woozy mysticism and became the client of an astrologer. The notion that his doings were directly related to the movements of heavenly bodies fired Vaguely with a new self-confidence in laying down the

astrologer's dicta. Because the astrologer's decisions were no worse than those of Vaguely's colleagues, and because Vaguely announced them with assurance, this executive became celebrated as a Man Of Action. The astrologer's errors made no difference in this case, because Vaguely was working for a government bureau in Washington."

Now I can agree with very much of Morton's article, but I automatically rebel against his statement that: "Preferment of the bonehead in management is age old — and further, it doesn't make any difference."

### *Improved Executive Decision Affects Whole Economy*

Just imagine, if you will, the tremendous impetus just a few percentile improvements in executive decision and action would give the whole economy. How better to accomplish this than through Taylor's second and third principles: better selection and better training.

The third principle, "the scientific education and development of men," recognizes the self-evident fact that it is not enough to determine the one best method of doing a job and placing an employee on that job who has the potential to become first class on that job —the employee must be properly trained for that job. Even further, the employee must be developed to utilize his highest skills and potential.

The fourth principle, "continuous, intimate, friendly cooperation between the management and the employees," is best explained by Mr. Taylor's own statement: "In its essence, scientific management involves a complete mental revolution on the part of the workmen engaged in any particular establishment or industry; a complete mental revolution of these men toward their work, toward their fellow men, and toward their employers. And it involves an equally complete mental revolution on the part of those on the management side, the foremen, the superintendents, the owners of the business, the board of directors; a complete mental revolution on their part as to their duties toward their fellow workers in the management, toward their workmen and toward all of their daily problems. Without this complete mental revolution on both sides, scientific management does not exist.

Now as we examine this statement, we could quickly conclude that this is merely a restatement of the golden rule as applied to the business area, and so we have traced it back to one of the most fundamental facts of all.

Granted that it is not given us to achieve Utopia in this life. But is not achieving even a part of this, better than achieving all of something else that is attainable? Actually, the alternative is some form of Nazism or Communism in our businesses. (Of course, we must be realistic enough not to set up frustrations and thereby defeat ourselves.) At this point in our thinking, it is well to remember how Chester Barnard put it, "that the most persuasive characteristic of authority is the extent to which it is violated. This is due to an excessive managerial reliance upon positional authority and an insufficient use of the authority of leadership. The subordinate, in some measure at least, retains the prerogative of 'hamstringing' or disregarding the order issued by his superior. Thus, authority resides in the subordinate as it does in the superior."

The scientific approach causes an unwarranted tendency in some men to deal in absolutes. The biggest factor in scientific management, and certainly the one about which we know the least, is man. This we do know: there are no absolutes about man! The mark of scientific management is continuous open-mindedness, inquiry and cooperation. Scientific management is a philosophy, not a bundle of tools and techniques. Uniformity of organization and consistency of approach, for example, are not ends in themselves but means to the end and to be so used by helping harmonious cooperation of people and the release of initiative and ideas.

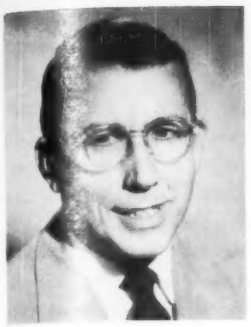
The Society of Advancement of Management just completed a very successful conference on "operations research." This approach offers tremendous promise because it could free up executive time while assisting executives to achieve greater validity in their actions. Certainly executives must plan their time to meet the requirements of Taylor's fourth great principle. *Fortune* magazine, particularly in its January issue, pointed out the overload that management already carries. The increasing rate of physical failures among management men is a great warning flag.

Could it even be that scientific management principles are saying to us across the span of years since Taylor first enunciated his crystal-clear, simple concepts: Let's take full advantage of all these wonderful advances in the art and science of management, by the judicious exercise of common sense! END

### George Washington Writes to a Friend About The Need for Efficiency In Office Routine, in 1785

*". . . In my last, by the Marquis de la Fayette, I gave you reason to believe that when I was more at leizure, you should receive a long letter from me; however agreeable this might be to my wishes, the period, it is to be feared, will never arrive. I can with truth assure you, that at no period of the war have I been obliged to write half as much as I now do, from necessity. I have been enquiring for sometime past, for a person in the character of Secretary or clerk to live with me; but hitherto unsuccessfully. What with letters (often of an unmeaning nature) from foreigners. Enquiries after Dick, Tom, and Harry who may have been in some part, or at sometime, in the Continental service. Letters, or certificates of service for those who want to go out of their own State. Introductions; applications for copies of Papaer; references of a thousand old matters with which I ought not to be troubled, more than the Great Mogul, but which must receive an answer of some kind, deprive me of my usual exercise; and without relief, may be injurious to me as I already begin to feel the weight, and oppression of it in my head, and am assured by the faculty, if I do not change my course, I shall certainly sink under it." . . .*

George Washington writing to D. Humphreys, from "Administration," by Albert Lepawsky, Knopf, New York.



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# What Good Are Role-Playing Techniques?

*by Bryan Wilkinson*
*Research Psychologist,*
*and J. H. Myers*
*Research Specialist*
*The Prudential Insurance Company*

**Every management man knows that an intellectual approach to any problem can achieve a theoretical result. But a man's emotions must be involved before he will respond to a program of personal improvement. Here is a description of one way an executive development plan was handled by a large insurance company. The program could be adapted by any type of company of any size.**

One phase of the executive development program in Prudential's Western Home Office is the evaluation of executive performance followed by counseling on the results of this evaluation.

Ratings are summarized by means of rating profiles. The executive doing the counseling has such a profile on each of his subordinates. It presently covers ten major areas of performance which came out of a factor analysis.

Of course, for evaluation to be effective, it much be followed by counseling and guidance. Anyone developing a program of performance counseling in an industry finds himself faced with the problems of motivating persons to counsel and of helping those who counsel brush-up on their counseling skills. Personnel Research found itself faced with these tasks.

Our first step was to provide the executives with reprints of an article by Earl G. Planty and Carlos E. Efferson entitled, "Counseling Executives after Merit Rating or Evaluation."

While it is an excellent article, it made an appeal only to the intellectual level. The result was that motivation was not changed, and consequently no counseling took place.

We needed a motivating device, something with a "kick." Role-playing looked like the answer. It helps people get their feet wet and at the same time teaches at the emotional level.

In our situation there were some drawbacks to the technique. Some of our executives had tried it out under other circumstances and had not been impressed. We were not sure how the men would react to "play acting." Furthermore, none of us in Research felt qualified to lead role playing sessions.

To overcome our own lack of experience we spent a week in rehearsal. This convinced us that role-playing could be a powerful teaching device, and we found that the "play acting" involved wasn't too bad.

Having reassured ourselves, we made the plunge. The first session was held with the top four executives of our office. Six members of the Research Department were also present, making a total group of ten people.

Personnel Research was responsible for developing the program. The Training Group of our company is now administering it.

A description of the first session might serve to illustrate how a typical session operates.

A brief description of the history of role playing was given. It was next pointed out that role playing can serve to brush up counseling techniques and also to try out different approaches to a difficult problem.

The rating profile of an hypothetical counselee was then outlined, and the relationships between him and his counselor were set forth. One half the audience were asked to put themselves in the counselor's shoes. They were to observe him closely to determine what he was trying to accomplish, what they would do differently, and what he did right and what wrong. The other half of the audience were asked to identify with the counselee. They were to try to get his feelings and reactions.

Members of the Research Department played both counselee and counselor. They had rehearsed the scene beforehand and knew that the counselor was to make some rather obvious mistakes.

After the interview had progressed for about five minutes, it was cut. The counselor was then asked to outline what he was trying to accomplish. The session leader noted this on a blackboard. The counselee was asked how he felt and this was also noted. The audience was then asked for good points. Poor points

about the interview were next requested. The final step in the discussion was to evolve some general principles from all of the material.

Another interview was then started. Two members of the Research Department took the roles. This time, however, "hidden briefings" were used. The counselee left the room while the counselor was briefed on how the counselee appeared to him. The counselor then left and the counselee was brought in and briefed about the role he would play. Here we slipped in a "kicker"—a motivation not known to the counselor. Actually, this scene too had been rehearsed, but the executives did not know it.

The scene was then played, but in the discussion following we first asked the audience to tell what the counselor was trying to accomplish and how the counselee felt. Doing it this way gets quick audience participation, but it can be rough on the counselor. It is not to be advised if the counselor is uninitiated or sensitive. The rest of the discussion followed as before.

We asked two of the executives to take the roles for the next interview. This runs counter to the usual advice because we placed a trainee in the "unsafe" role for his first try. I would recommend the procedure we used for situations such as ours because it is more realistic to have executives counseling executives. The man you select for counselor should be someone you feel will do a good job or someone who has enough self-assurance so that he will not be too upset by criticism he will receive.

"Hidden briefings" were used in this and all subsequent interviews. In the discussion following, the counselor and counselee were asked to express themselves before the audience jumped in.

A record was kept of the principles evolved after each role playing situation. At the conclusion of the series of sessions, these principles were organized and distributed to the executives involved.

### *Sixteen Questions, Answers On Role-Playing Programs*

1. *Does it work?* It did motivate counseling. Several months elapsed between the rating and the role playing sessions. During that time no performance counseling was done. Shortly after the sessions counseling did begin and all of our executive staff have now been counseled. As far as its effect on techniques is concerned, executives felt that it did not point up new ideas so much as it helped them solidify their own ideas. It also pointed out possible pitfalls which could be avoided. They did feel that they would have discovered these pitfalls after a couple of interviews, but they thought it was best not to have to do it that way.

2. *Why use role-playing?* It is a technique which appears to work. It also provides an emotional learning experience. If a man's pet approach doesn't work, he finds it out emotionally as well as intellectually, and he wants to try a different approach. Principles evolved are the participants' principles. For example, they know why it is important to listen to the counselee since a role-playing interview was unsuccessful because the counselor failed to listen. This is the sort of stuff you can't get from books.

3. *Where do you get your problems for the sessions?* Initially we make up a few problems keeping them as realistic as possible. We found that as the session progressed, the executives would suggest their own. In all sessions after the initial one we try to use the problems suggested by the executives.

4. *How long does a role playing interview last?* Usually it runs from five to ten minutes before we cut it. It may run longer if things are proceeding well. Only on occasion is a role playing interview completed. The discussion afterwards may last as long as 45 minutes.

5. *How many sessions do you have?* As many as the executives want. A highly successful session almost invariably brings requests for another.

6. *In the discussion following the role play do you try to get them to arrive at pre-determined principles?* No. In fact, when we suggested principles before the executives were ready for them, the principles were rejected.

7. *Do you screen the principles which are evolved?* No. The principles screen themselves. An unsound principle will not work in a later situation and will be taken off the list. For example, one principle we evolved was "Show him the rating form," the idea being that we should be honest and open handed with the person being counseled. We should let him know right where he stands. This blew-up in our faces about three role playing situations after it was evolved.

8. *How do you sell such a program?* There is no universal solution to the problem of selling the program. Some possible rules might be: (1) There must be a need, (2) Start with the top, (3) Get active involvement early, (4) Keep it realistic.

However, a good role playing session will sell itself, a poor one will kill itself.

9. *When do you cut a situation?* You cut when the interview appears to be bogging down: If no new points are being raised, if the interview has wandered from the main consideration and has become centered about a specific detail, if it degenerates to a "yes you did," "no I didn't" sort of thing, or if the counselor needs to be rescued from a tough situation. You can get your cues as to when to cut from the audience as well as from the actors.

10. *Do "touchy" situations come up and if so how are they handled?* Cutting the scene or humor might relieve the situation. However, we have not run into a situation which was really "touchy," and we suspect that such situations would occur too infrequently to worry about.

11. *Have any of the participants experienced a loss of authority, say, due to poor handling of a situation?* The executives agree that they did not feel any such loss of authority. They did say, however, that they felt much more comfortable in the actual counseling situation than they did in the role playing situations. The "trial by fire" of role playing may have helped make them feel more relaxed in the actual interview.

12. *Do you ask for volunteers?* Sometimes yes, but ordinarily no. By selecting the participants we can insure total participation. If a man appears to be bored, we make sure that he is the next counselor, and we may give him a particularly difficult problem to handle.

13. *Do the executives use role playing among themselves to practice?* We suggested that this be done. Those doing the counseling have not felt the need for such practice, and so none of them have held "dry runs."

14. *Are periodic review sessions necessary?* They might be helpful. In our company, if the man feels the need for review, he drops in on one of the current sessions.

15. *How many do you have in a group?* Our groups usually consist of four new trainees and from five to seven familiar with the procedure.

16. *What makes a successful session?* We feel that the man who conducts the session can make or break it. He must know when to cut the interview, where to direct questions, who to have play the roles, how to summarize the remarks on the black board, and above all how to maintain the tempo. END

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# Must Management Change To Prepare For Automation?

*by M. L. Hurni*
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**There is no longer any question: the automatic factory is coming, will be an imposing factor in future management planning. How must management change? How has automation influenced today's management thinking, planning, actual operation? This author's firm is intimately concerned with the problems of the automatic factory, as should be every American business, large or small. Here is some recent thinking on this important subject, with a shrewd professional evaluation of management's place in the future.**

MANY changes must occur in management's approach to its problems if the automatic factory is to succeed. Management must acquire new techniques and attitudes to supplement existing experience and judgment. The automatic factory does not creep up on management. Management must change first.

What the specific answer is in any particular business no one can say. There are as many answers as there are industries and industrial techniques.

However, there are a number of general aspects to this problem that any business must solve as it begins to go automatic.

Any degree of automation, no matter how limited, requires a certain preplanned underpinning of carefully thought-through procedures, if it is to be successful. Management must take on a new creative role, if the automatic factory is to be evolved, and subject itself to additional discipline after the automatic factory is created.

There are differences at various stages as the automatic factory develops from the first conveyorized material handling into the ultimate automatic factory.

The elements of the techniques that must be used by management are here today and in use. What does not exist extensively is the organization and manipulation of these techniques as a unified body of knowledge purposefully employed for the design, operation and control of the factory. Strangely enough, the attitude of mind that leads to this development of a unified philosophy for the whole of a business is necessary at all stages in the evolution of the automatic factory from the day it starts to change from a batch by batch, bit by bit, or job by job shop. This attitude must come first.

This attitude on the part of management is very similar to that of the designing engineer who sits down to design a machine. I believe you will agree that in beginning a design project the engineer discerns first.

1. What the machine must accomplish.
2. What environmental factors may affect its design.
3. What economic factors may affect its design.
4. What means are feasible for doing the job and then which is the most satisfactory one.

There follows then certain creative acts including:

1. The development of a mathematical, rigorous design in detail.
2. The selection and development of mathematical, rigorous control in detail.
3. The writing of operating manuals and instruction books capable of being understood by an intelligent operator.

The designing engineer may work on different phases of the design at different times. He may call upon various specialists at different times to perform certain functions but at no time does he lose sight of the whole—the ultimate machine and its function. All efforts, no matter how diverse or how interesting in themselves, are merely viewed as means in accomplishing the overall purpose.

The attitude of management must also be similar to the discipline of the manufacturing executive who utilizes the machine. This individual discerns among other things:

1. What the machine is capable of doing so that he may use it in accordance with its purpose.

2. At what rate the machine may be operated so that he may schedule work to it in such a manner as to obtain maximum utilization and optimum flow.

However, in so doing he also expects that the machine will respond to certain overall controls and that each portion of the mechanism will respond rigorously to a turn of the dial or the movement of a lever on the control panel.

In other words, before any degree of automation is possible, management must

1. Become creative in the sense that it explores and then defines a situation and designs an operation as a whole to provide for that situation.
2. Be aggressive in the sense that it forecasts decision-making situations and builds in during the design phases of the operation the possibility for optimum performance when these situations arise and adequate controls to govern the operation rigorously as situations arise.
3. Learn to direct by the authority of superior knowledge of the operation as whole and not by the prerogative of status — machines do not recognize status, they do respond to understanding of their function.
4. Understand when redesign in whole or in part is essential to meet an unforeseen situation and not unknowingly impose that condition upon the existing operation.

It is not possible to discuss in its entirety the design of an automatic factory and the relation of management to all phases of its development and thereby to enlarge upon a description of this attitude. However, it is possible to cite a few specific examples of the kinds of things that must be encountered and solved:

### *Going From "Batch" Concept To Continuous Flow*

There is first the problem of going from the batch concept of manufacturing to continuous flow. Here one is usually confronted with the problem of too many products, or too many models, or too small orders.

A management of the type we are discussing has a variety of creative approaches to this problem as they proceed with the design of an operation. A few of these are the following:

Redesign of the product or products is one method of providing continuous flow. This approach has been discussed quite learnedly in the trade and technical journals and need not be enlarged upon here except as it indicates the close interrelationship that must exist among engineering, manufacturing, marketing, and management. The redesigned product may not represent the engineering ideal but it should represent the optimum when viewed from the standpoint of both engineering and manufacturing. It may also not represent the ideal from the standpoint of the single isolated customer although it should represent the functional ideal for the average customer as well as engineering and manufacturing. This is unquestionably one of the most difficult, time-consuming and risky approaches to the problem.

### *Can a Business Be Too Diversified?*

All too frequently a business appears to be too diversified when examined on a day-by-day basis. In a given day, the operation may receive one hundred orders for the same model and, if the plant is designed around an order-by-order approach, its management is immediately entangled in a jungle of colossal trifles. However, when this business is examined in terms of a reasonable unit of time, a great deal of this diversity disappears. It frequently occurs that, when the orders are examined on the basis of an entire year or several years, perhaps as few as ten models out of thousands listed represent a substantial portion of the total volume even through individual orders day by day or only by ones and twos. Further examination quite frequently indicates that this same pattern exists on a week by week and month by month basis.

If such is the case, a variety of opportunities are open to the forward-thinking, planning type of management. Among these are included:

1. The possibility of going automatic on the popular, regularly recurring items, while retaining a job shop for the others.
2. The possibility of developing a program of organized attrition of the less popular items that usually represent a relatively small percentage of the business.
3. The possibility, along with attrition, of partial redesign to include in the remaining models desirable features of those planned for elimination.

All too frequently in the multi-model line what is required is no more alarming than a redesign of the engineering documentation. Most multi-model or multi-product lines are quite mature. By this I mean that extensive engineering work has been done on them over the years, and the basic engineering techniques are well understood. The applications are also usually well documented and broadly known. Industry and trade standards have evolved, and there are developed what are often called lines of designs rather than individual designs. Despite this fact, in many cases the engineering is documented on a model by model basis, as though each model was the first, last and only one of its type ever to be built. As a consequence, the manufacturing man is never able to grasp the overall engineering philosophy and incorporate it into the operation of the plant.

When the engineering is examined on an overall basis by lines of product rather than by the individual order, it is frequently disclosed that there is a great commonness in parts across many model numbers and that continuous flow of parts is feasible. It is also frequently discerned that the assembly operations are similar and not beyond the scope of some automation.

Contrariwise, it is also unusual to discover that many simple detail changes can be made in the engineering designs to arrive at the line of designs concept.

These are illustrations of the kind of exploration and thoughtful planning from the results, that management must do as it starts down the road to automation.

### *Management Often Takes Action Before the Fact*

Another phase of the management attitude previously mentioned is taking action before the fact. Having determined that some simple order does exist in the apparent diversity of input to the operation, perhaps by one of the means just previously described, management is then usually in a position to make certain optimizing calculations with respect to the business and from them to derive certain logical rules and controls which begin to tie the business into a mathematically rigorous unity not unlike that expected in the design of the individual production machine.

This is the province of Operations Research. Again only a few simple illustrations can be cited. Management in

its new attitude must expect that this kinds of things can be done and take steps to do them. As illustrations consider the following:

If it is disclosed that the operation uses a limited number of families of parts in some orderly manner to make a variety of models, the existence of these families, while not changing the nature of the problem from the order by order type of operation, greatly reduces the number of details that must be considered, since only one set of details need be considered per family. This again makes it possible to comprehend the basic logistics of the factory.

### The Problem of Inventory Size

Take the problem of inventory size. Since the number of individual items that must be examined has been logically organized by families of parts rather than parts for individual models, or individual orders, it may be reduced in size to the point where it is possible to again examine the operational aspects of inventory size for a given situation of output mathematically. Stated in its simplest form, the cost of carrying inventory can be equated against the cost of set-up and take-down of machines or against the economies of larger volume purchases, handling costs, and transportation.

The resultant solution can then be specifically stated for each family and possibly set up as visual controls on the stock bins. Replacement cycles can also be devised around these solutions and specifically stated for given levels of business.

Obviously, in forecasting situations of this type, various levels of business should also be examined and inventory determination made and stated in the book of instructions or operating tables so that, when subsequently management determines that the level of business is a certain amount, the decisions concerning the corresponding levels for details are already pretty well pinned down and documented for lower levels of management and supervision.

In this simple example there have been used three common Operational Research tools of which you have no doubt heard:

1. The conceptual model or equation of the factors relating to inventory size.
2. The application of the minimax principle or solving the equation for the optimum situation.
3. The establishment of data for a series of predetermined or forecasted states of the business.

Something else has also been done. There has been designed with reasonable rigor the mechanisms within a portion of the operation. It is true this has not been done with linkages, cam, gears, or electric circuits. Instead there are employed the use of tables, instruction, etc. Nevertheless, there has been performed the same kind of thinking and doing that the designing engineer does within the production tool.

Another type of problem that requires solution as a part of the design of the operation is the determination of the total load that can be carried for various combinations of product mix. Here again Management is setting down the rules or instructions by which the operation is governed, by examining situations before the fact and forming mature judgments about them for the lower levels of operating management. Again, the techniques of mathematics are used in forming and expressing the judgments as the language of numbers bring with it a precision of definition and rigor not found in the language of words.

### What Does Operations Research Do For Operation?

The techniques of Operations Research in a more general sense bring to the design of the operation the idea of a model or series of models of the concepts of the operation that may be tested for their agreement with the facts of life as they are understood. These models, mathematical in construction, equate the independent variables and constants of the situation against the dependent variable in a manner presumed to describe the situation. Either or both the independent variables and the constants may then be varied in the manner that judgment, experience, or observed data indicates and the effect or effects upon the dependent variable, whatever it may be, noted. The validity of the relationship of independent variables to dependent is thereby tested and a model of the real situation obtained which gives a close approximation of the situation that actually exists. These relationships then provide the basis for the rules by which the operation is run in more rigorous fashion.

A simple example that has been cited by the Operations Research people of New England—Arthur D. Little Co. of Cambridge—in their advertising, is

$$R_o = A_oS_o + A_1S_1 + A_2S_2 + A_3S_3 + \text{———} A_nS_n$$

which describes the relation between returned merchandise and sales by the week where

$R_o$=Returns of merchandise in a given week, an independent variable

$S_o$=Sales in the given week, an independent variable

$S_1, S_2$———=Sales in first, second, etc. previous weeks, other independent variables

$A_o, A_1$———=Constants to be solved for, some of which may turn out to be zero.

In complex situations, if this job is done thoroughly, there may be involved hundreds of testing calculations and it is for this purpose that the integrated high-speed general purpose computing machines become a useful tool for speedy solutions; where questions of choice of variables, interrelation of variables, and intensity of the effect of variables, may be factors.

Somewhere in the course of designing the automatic or semi-automatic operation, there must be brought together the best of judgment, experience ability to achieve a knowledge and understanding of the whole of the operation. It is at this conceptual model building stage that this should be done. Exercise of judgment cannot be dissipated and thinned down through the whole organization where facts may not be fully known, in the hope that somehow when situations arise, someone will be ingenious enough to stumble through.

### Ability To See and Think Broadly Is Necessary

What is required is the ability to survey the whole and think the problems through in the bulk so that ground rules and a framework is established on which lower levels of management can subsequently make detailed decisions consistent with the structure and the rules governing the whole operation.

A third part of this attitude is the preestablishment of controls. In its essence this consists of:

1. Knowing what things in the chain of events are vital or controlling.
2. What control data from each of these areas means and how it should be interpreted.
3. Where the data should flow. Should

it go to the foreman, to the superintendent, to the manager's office.

4. If the feedback of control data is a secondary loop inside the structure, say from the production line to the foreman or superintendent, what rules based upon preconceived models should be given this supervisor so that he does not go off on a tangent inconsistent with the remainder of the operation. People seem to understand in an increasing degree the nature of feedback in the wired circuit but the similar nature of feedback in the unwired circuit of human relations within the business structure does not seem to register equally well. It is nevertheless there and subject to pretty much the same broad rules.

### What Is the Actual Key To Good Communications?

I believe it desirable to inject a seemingly extraneous point here. Much is written these days about communications in the Industrial Operation. It is my impression that few writers have hit on the key to good communications. This key is transmitting either the why of a situation to the right levels of organization, or putting the how at the proper place so that, when brief commands come, they may be properly executed.

The best statement I have yet seen on communications is also the shortest. It was given by Mr. R. H. Sullivan, of the Ford Motor Company, in answer to a question at an A.M.A. Panel Discussion. Said Mr. Sullivan in part:

> "The multiplicity of problems with which the foreman has to contend nowadays had made it necessary that he have a better understanding of the reasoning behind these problems."

A major portion of the design of controls by management concerns itself with reasoning out first the logical actions that must be taken under a preconceived condition. The designer of an electrical or mechanical feedback system does that—Management in its new role must do the same.

Stating these things in more familiar terms, some of the more significant changes that will occur in management attitudes are the following:

1. Management will tend to lead, to instruct, to educate more from clearly stated reasoning, in order that the entire organization will operate in synchronism.
2. Management will plan more than is now the case, in order to accomplish this objective.
   a. Management will spend more time objectively collecting and analyzing data rather than placing reliance on past experience and custom alone.
   b. Management will also devote more time to discerning and analyzing situations before the fact rather than after, so that decisions can be made quickly and accurately, possibly even be built in. There will be less time for committee meetings to decide what to do about pressing problems when such problems may shut down the shop.
3. Management will state things quantitatively since the shop will become less and less a collection of isolated production tools and more and more an accurately coordinated whole. Relations will be stated in the precise language of mathematics, be it arithmetic or the mathematics of probability, rather than in the more easily misinterpreted language of words.
4. Management will devote more time to finding out what the meaningful control points are in its operations and the quantitative relations that exist among them—again so that communications can be acted upon more quickly and intelligently.

### Management Must Rely More On Its Specialists

5. Management will learn to place greater reliance on a group of specialists who will bring to management problems special skills needed because:
   a. Data from critical control points will be required more quickly.
   b. Data from various points must be correlated and interpreted in a meaningful manner from preconceived standards, derived from the concepts of statistical mathematics and knowledge of sensing mechanisms, as well as the technology of the process. Much of the routine sensing, testing, and calculating will ultimately be set up automatically. This applies not only to the relations in the factory itself but in the marketing and distribution areas as well.
6. Management will learn to analyze and state its problems in terms these specialists can understand.
7. Management will spend more time integrating and directing the activities of these specialists toward the desired objectives of the operation.
8. Management will spend more time educating its junior executive engineers, financial people, marketing people, manufacturing people, to understand each others functions and problems. Little empires can no longer exist since
   a. Designs must match the preestablished pattern of the automatic factory.
   b. Sales input must be matched to the capabilities of this factory.
   c. Manufacturing objectives must be kept within the overall financial concepts of the operation.
   d. Financial accounting must be geared to assist other functions quickly and not be devoted predominently to the ultimate end of a tax report and profit and loss statement.
   e. Each function must be able to bring its immediate support to others in the solution of specific problems when they arise with full knowledge of other functions and their relation to the whole.
   f. All functions must become coordinated elements of the whole in which market analysis, product planning and design, production planning, purchasing, and distribution are just as important a part as the automatic factory itself. Unless input and output to that factory are coordinated, it will not work.

### The Final, Most Important Point For Management

9. Perhaps most important of all, Management will think of wholes, the whole of the operation, the little universe it runs, in which it will be continually attempting to pin down relationships on a firm analytical basis rather than on the basis of some kind of indefinite feel it thinks or hopes it has for the situation.

Management expects this sort of thing now of our engineers when they design a machine. Management expects them of our operating people when they use a machine. When management makes its factory one big integrated machine, it must also expect them of itself. END

# CIPM Reports . . .

## A New Advance in International Management Communications

A new invention has now invaded the activities and imagination of certain scientists and engineers. It is not only something which is being talked about among professional circles, but it is also something to talk with. It is called *Interlingua*, an international language devised during the past twenty-five years by an international group of engineers, technical men and linguistic experts.

Interlingua has been designed primarily to simplify the international exchange of ideas and developments in the fields of science and engineering. It is essentially a language to be written and read, rather than spoken. The syntax and vocabulary of Interlingua are the results of a union of English, French, Italian, Spanish, Portugese, and a little German, with the idiosyncrasies and difficulties of each left out.

### Language Is Now In Use

A number of publications in the new language have appeared during the past year. They include a monthly journal entitled *Spectroscopia Molecular*, published at the Illinois Institute of Technology by Dr. Forrest F. Cleveland, and a monthly Interlingua edition of *Science News Letter* which is published by Science Service under the direction of Dr. Alexander Gode, formerly director of research of the International Auxiliary Language Association.

The connection with management? Interlingua, if it were expanded to include a standard business vocabulary, could be very useful in expediting the international exchange of scientific management ideas and methods.

For the manager who seeks uniformity in commercial specifications and who expects a mutually rational understanding and behavior between himself and his foreign counterparts, Interlingua can be a very useful tool. Also for all public and private concerns which participate in the international dissemination of advanced management knowledge, Interlingua could be a great help. It would minimize the overlapping of research studies in the management field, and would allow management to keep very much abreast of research work being done outside their respective countries.

Management men, like scientists, engineers, and other professional men, are particularly suited to employ an international language, for the objectives and procedures of management everywhere in the world are of similar character. International business relations, unlike the power political relations among nations, have no place for diplomatic gobbledygook or shaded meanings. There is only room for reciprocal understanding of explicit, straightforward facts. A universally-employed language in international business communication would be an easy and practical insurance against business loss incurred through verbal misunderstanding. There would be no ambiguity in the international exchange of information on such management fundamentals as prices, wages, market conditions, investments, taxation problems, and organization structure. There would also be less misunderstanding among different national groups who are participating in the exchange of professional management knowledge. Standardization of management terminology in the English language has already made encouraging headway in this country. Interlingua would extend such standardization to the world.

### Not a Business Panacea

It should be emphasized here that Interlingua is not a panacea for the problems of international business relations. But neither is it a gadget to be taken lightly. It is a practical idea. Its inventors have, for the present, limited its range of usefulness to the scientific professions. Dr. Gode soberly underlines this point as follows:

"To become international, a language must have a force behind it to make it spread: for example, Latin's influence spread through Europe with the Roman colonizing legions, Christianity, and the revival of classical Latin during the Renaissance. The motivating force of language in the twentieth century is science."[1]

Without doing Dr. Gode's statement an injustice, it would seem only correct and justifiable to include in "science" all professions, including management, which employ a universal body of known data, methods, and terminology.

### Interlingua Easy to Read

The professional man who attempts to read Interlingua finds the going easy. It is a model of simplicity and exactness. A general knowledge of Latin or its derivatives will suffice, with little need for reference to the Interlingua dictionary or grammar. Consider this short passage in Interlingua:

"Energia es necessari pro toto que occure in le munde. In tempores passate le plus grande parte del energia applicate esseva fornite per le fortia muscular del homines a del animales domestic."

The English translation is obvious: "Energy is necessary for all that occurs in the world. In past times the greatest part of the applied energy was furnished by the muscular strength of men and domestic animals." Writing in Interlingua, of course, would demand special study; but it might be time well spent when we consider the years required to master two or three of the world's primary languages.

The proponents of closer cooperation among the world's management should give Interlingua serious consideration. International business affairs, government restrictions, and linguistic differences are now the principal barriers to increasing the fellowship and professionalization of the world's managers. Otherwise, all enlightened managers are united in a common endeavor to spur industrial productivity, technological progress, and the promotion of a relatively exact management science. The linguistic barrier, at least, would be removed when and if world management, after careful deliberation, adopts and uses a common language for international communication.

BY ROBERT GLEASON
DIRECTOR OF RESEARCH, CIPM

[1] A. Gode, "The Case for Interlingua," *Scientific Monthly*, August 1953.

The COUNCIL FOR INTERNATIONAL PROGRESS IN MANAGEMENT, formerly the National Management Council, is a non-profit, non-political organization devoted to the promotion of the practice of scientific management on the international level. SAM is a co-founder and charter member of CIPM.

# MAY CHAPTER ACTIVITIES

| CHAPTER | SUBJECT | SPEAKER | TITLE | PLACE | DATE |
|---|---|---|---|---|---|
| *Atlanta* | Industrial Engineering For a More Useful Life | Dr. Lillian M. Gilbreth | President, Gilbreth, Inc. | Atlanta Athletic Club | 13 |
| *Baltimore* | Some International Aspects of Planning for the Future | Henry E. Niles | Deputy Director, Technical Cooperation Administration, American Embassy, New Delhi, India | Stafford Hotel | 4 |
| *Binghamton* | Maintaining Prosperity Through Management | Prof. Erwin Schell | Mass. Institute of Technology | Arlington Hotel | 19 |
| *Birmingham* | Two Day Southeastern Management Conference | | | Battery Park Hotel, Asheville, N. C. | 6 & 7 |
| | Organizational Planning | George Estes | V. P., Seeger Refrigerator Company | Molton Hotel | 11 |
| *Boston* | Getting People to Cooperate—Ladies Nite | Elinore Trowbridge | Instructor, Human Relations, Boston University | University Club | 6 |
| *Central Pa.* | Pass The Word Along | Paul R. Beall | Scientific Advisor, Air Research & Development Command, Baltimore, Md. | Camp Hate-To-Leave-It, Bellefonte, Pa. | 20 |
| *Chicago* | New Developments in Industrial Engineering | Theodore W. Franks | T. W. Franks & Assoc. | | 11 |
| *Cincinnati* | Employee and Supervisory Development Plans | Earl G. Planty | Executive Counselor, Johnson & Johnson | Hotel Alms—Marie Antoinette Ballroom | 6 |
| *Clearing* | Plant Tour | E. Matz | | | 6 |
| | Executive Dinner | | | Clearing Industrial Club | 20 |
| *Cleveland* | Social Meeting | | | | 12 |
| | Industrial Engineering Round Table | Nevin K. Brothers | | Tomlinson Hall—Case Campus, Conference Rm. C | 17 |
| | Top Management Round Table | Hugh D. Luke | | Tomlinson Hall—Case Campus, Conference Rm. C | 19 |
| | Industrial Relations Round Table | Edwin D. Phillips | | Tomlinson Hall—Case Campus, Conference Rm. C | 24 |
| | Plant Tour | | | Barth Stamping Co. | |
| *Dallas* | Public Interest Luncheon | G. Keith Funston | President, New York Stock Exchange | Adolphus Hotel | 12 |
| *Dayton* | How to Participate In And Lead a Meeting | Francis J. Kelly | | Engineer's Club | 25 |
| *Detroit* | Trends in Personnel Administration | Dr. Dale Yoder | Director, Industrial Relations Center, U. of Minnesota | Rackham Educational Memorial | 4 |
| *Fox Valley* | Material Handling | | | | 13 |
| *Greensboro* | Ladies Night | | | Starmount Country Club | 25 |
| | Southeastern S.A.M. Conference | | | Battery Park Hotel, Asheville, N. C. | 6 & 7 |
| *Greenville* | | | | Hotel Greenville | 12 |
| *Hartford* | M.T.M. Round Table Discussion | Harold E. Smalley | | | 20 |
| *Hudson Valley* | Management Looks at Materials Handling | Sears L. Hallett | Publisher, MODERN MATERIALS HANDLING | Hendrick Hudson Hotel, Troy, N. Y. | 4 |
| *Indianapolis* | Ladies Night | Mercedes Hurst | International Harvester Company | | 12 |

| CHAPTER | SUBJECT | SPEAKER | TITLE | PLACE | DATE |
|---|---|---|---|---|---|
| *Kansas City* | Problems of Organizing and Operating a Small Business | Robert Wallace<br>Guy Stanley, Jr.<br>Philip Solomi | President, Wallace Manufacturing Co.<br>President, Concrete Materials, Inc.<br>President, K. C. Wishbone Salad Dressing | Pine Room, Fred Harvey Restaurant, Union Depot | 18 |
| *Knoxville* | Ladies Night | | | Farragut Hotel | 13 |
| *Lehigh Valley* | Annual General Business Meeting | | | | 11 |
| *Madison* | Why Management People Fail | Dr. Vaughn | Roher, Hibler, Replogle | | 6 |
| *Manchester* | Management and Government | Governor Hugh Gregg | Governor, State of New Hampshire | Carpenter Hotel | 5 |
| *Milwaukee* | Managers as Industrial Citizens | | | E.S.M. Building, 3112 W. Highland Ave. | 13 |
| *Montreal* | Annual Business Meeting | | | Ritz-Carlton Hotel | 12 |
| *Nashville* | Ladies Night | | | | 14 |
| *New Haven* | Plant Tour and Dinner Meeting | | | U. S. Rubber Company, Footwear Div., Naugatuck, Conn. | 20 |
| *New York* | Special Activities Seminar | David Dougherty | | Roosevelt Hotel | 20 |
| *Philadelphia* | Moral Aspects of Industrial Engineering | Ralph Presgrave | | Poor Richard Club 1319 Locust Street | 4 |
| *Pittsburgh* | How Government and Industry Can Work Together | Congressman Wm. H. Ayres | Congressman from Ohio | Webster Hall Hotel | 20 |
| *Portland* | Research and Development in the Pacific Northwest | Dr. Eri B. Parker | Director, Institute of Technology W.S.C. | Pacific Power & Light Board Room, Public Service Bldg. | 26 |
| *Providence* | Cost Reduction | Bruce Payne | Bruce Payne & Associates | | 6 |
| *Raritan Valley* | Plant Visitation and Dinner Meeting—Automotive Production Scheduling | Earl J. Bond | Plant Manager, Lincoln-Mercury Div., Ford Motor Company | Lincoln-Mercury Division Ford Motor Co., Metuchen, New Jersey | 19 |
| *Reading* | | Keith Louden | Asst. to President, York Corporation | Iris Club, Wyomissing, Pa. | 10 |
| *Richmond* | Philosophy of Modern Management | Dr. Sydney Q. Janus | Georgia Association of Psychologists | John Marshall Hotel | 26 |
| *Sacramento* | Employee Opinion Surveys | Dr. Robert Gray | California Tech | | 4 |
| *St. Louis* | Marketing Principles and Integration with Advertising and Sales | | | | 11 |
| *Trenton* | What Are You Doing About Labor Costs? | Phil Carroll | Management Consultant | | 18 |
| *Twin City* | Student Chapter Meeting | | | Minnesota Union | 13 |
| *Western Mass.* | Work Simplification—(Spring Conference) | Allan Mogenson | | | 20 |
| *Western N. C.* | Dinner Meeting and New Industries Night—National Defense | Robert Stevens | Secretary of the Army | George Vanderbilt Hotel | 12 |
| | Southeastern Management Conference | | | Battery Park Hotel, Asheville, N. C. | 6 & 7 |
| *Wilmington* | Clerical Measurement | Alexander Strong | Rath & Strong, Inc. | Hob Nob Tea Room | 13 |
| *Worcester* | Plant Tour | | | Wyman-Gordon Company, North Grafton Plant | 17 |
| | Importance of the Forging Process in Modern Industry | George W. Motherwell | V. P., Production, Wyman-Gordon Co. | Worcester Airport, Administration Bldg. | 17 |

# *New Management Writing . . .*

**ETHICS IN A BUSINESS SOCIETY,** ***by Marquis W. Childs and Douglass Cater. Harper & Brothers, New York. $2.75.***

Prompted by a survey conducted by the Federal Council of Churches, this book is a tracing of the history of ethics and religious aspirations in relation to economic orders throughout the course of Judeo-Christian civilization. It makes the point that the Christian principle of respect for the individual in society has been the distinguishing factor in the development of the democratic business economy, and that when economic life becomes too widely divorced from the concerns of religion, the result has been confusion about ends and means. A meaningful insight into the fusion of seemingly disparate areas of modern life. One of the rare, realistic cultural books for the modern executive.

**ECONOMIC SURVEY OF EUROPE IN 1953, AND ECONOMIC SURVEY OF ASIA AND THE FAR EAST,** ***prepared by the Research and Planning Division, Economic Commission for Europe, published by the Columbia University Press, New York. $2.50, and $1.50.***

These two handsome paper-bound books are the answer to the management man who would like a grasp of today's world economic forces. The two reports are companion pieces, prepared to serve the U. S. Economic Commissions responsible for each area. Obviously there should be no better or concise statements of the European and Asian situation as they might possibly affect American business and industry.

The text is simply descriptive and it backgrounds the charts and tables that clarify the various topics, all of which relate to those economic conditions abroad which can be of use to American business.

**POWER OF WORDS,** ***by Stuart Chase in collaboration with Marion Tyler Chase. Harcourt, Brace and Company, New York. $3.95.***

*Power of Words* is a more positive extension of Mr. Chase's earlier book, *The Tyranny of Words.* It is divided into two sections: Part I, *Findings;* and Part II, *Applications,* a much shorter section.

The book is concerned not with improving the reader's facility and precision in the use of words, but with interpreting "significant findings" about communication. After first giving a general outline of the field of communication, the author plunges into the findings of communication engineers, brain psychologists, linguists, grammarians, animal psychologists, perception psychologists, cultural anthropologists, physicists, mathematicians, and semanticists.

Mr. Chase's own use of words is sometimes alarming ("The assumption peoples the world with verbal monsters") and not quite clear, but the book is full of anecdotes and should be pleasant reading for those who are interested in the field of communications *per se* and in the monsters who people it.

**HOW TO WRITE REPORTS,** ***by Calvin D. Linton. Harper & Brothers, New York. $3.00.***

Better business writing is the broad goal of this work; it should be a valuable aid for everyone who must communicate his findings in a clear and forceful form: government men, scientists, military personnel, and businessmen. The book is divided into sections titled Forms, Methods and Mechanics; it includes a worthwhile brush-up on points of grammar, some hints on how to take notes and outline, as well as a discussion of the nature and purpose of reporting techniques. A book of incalculable value to the forward-looking, growing management man.

**THE SOCIOLOGY OF WORK,** ***by Theodore Caplow. University of Minnesota Press, Minneapolis. $5.00.***

One of the first full-scale insights into the sociological aspects of the activity to which the majority of adults devote a third of their lives. This careful, interesting study will be of great value to industrial psychologists, personnel men, economists and labor relations experts. Special sections discuss such areas as the occupations of women and the prospects for improving the conditions under which men work.

**INDUSTRIAL TRAINING FOR MANUAL OPERATIONS,** ***by W. Douglas Seymour. Pitman, London. $4.50.***

A British research expert who specializes in industrial skills gives an account of recent developments in industrial operator training and outlines basic factors affecting industrial skills and their acquisition. Of special interest as a guide book for the process of training workers who must perform repetitive operations in industry. An appendix provides the complete story of a specimen operator-training course in the textile industry.

**PSYCHOLOGY OF PERSONNEL IN BUSINESS AND INDUSTRY,** ***by Roger M. Bellows. 467 pages. Prentice Hall, Inc. New York. $7.35.***

This welcome second edition provides an important link between the valuable research in this growing field, and the application of it to business and industry.

In the present volume less space is given to the historical and theoretical considerations made much of in the first edition. The result is a book more concerned with the actual, practical psychotechnology that absorbs students of personnel problems today.

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## CHAPTER MEMBERSHIP STANDINGS

### April 1, 1954

| Chapter | Membership | Chapter | Membership |
|---|---|---|---|
| Northern N. J. | 416 | Richmond | 67 |
| New York | 407 | Kansas City | 66 |
| Philadelphia | 341 | Columbus | 65 |
| Cincinnati | 318 | Lehigh Valley | 65 |
| Chicago | 295 | Reading | 65 |
| Cleveland | 291 | Hartford | 64 |
| Pittsburgh | 246 | Central Penn. | 62 |
| Boston | 237 | Clearing | 58 |
| Detroit | 216 | Birmingham | 55 |
| Washington | 214 | Bridgeport | 55 |
| Lancaster | 212 | St. Louis | 54 |
| Milwaukee | 158 | Western Mass. | 50 |
| Los Angeles | 144 | Calumet | 47 |
| San Francisco | 140 | Greenville | 47 |
| Worcester | 127 | Knoxville | 47 |
| Dallas | 117 | Central N. Y. | 45 |
| Baltimore | 105 | Fox Valley | 41 |
| Western N. C. | 105 | New Orleans | 40 |
| Indianapolis | 104 | Louisville | 39 |
| Raritan Valley | 103 | Sacramento | 38 |
| Hudson Valley | 101 | Portland | 37 |
| Binghamton | 98 | Twin City | 37 |
| New Haven | 95 | Wilkes-Barre | 37 |
| Greensboro | 92 | Manchester | 36 |
| Montreal | 90 | Madison | 35 |
| Dayton | 89 | Nashville | 33 |
| Providence | 73 | Stamford | 21 |
| Atlanta | 71 | Non-Chapter | 100 |
| Charlotte | 71 | Non-Resident | 83 |
| Wilmington | 71 | | |
| Trenton | 69 | | |

The book should be of help and practical interest to industrial psychologists, personnel and business managers, and in particular to those firms interested in having a "case book" to study in planning a course in executive development or in supervisory training courses.

PRINCIPLES OF INDUSTRIAL PSYCHOLOGY, *by Thomas Arthur Ryan and Patricia Cain Smith. Ronald Press, New York. $5.50.*

A new text by two Cornell psychologists (Professor Ryan is department head there) which surveys the entire field in the light of the most recent knowledge. For all those whose responsibility it is to cut costs and improve working conditions, this work will undoubtedly see wide usage both as a classroom text and for men in industry who wish to keep abreast of the times in this vital and growing field. Of special interest is the full treatment of the problem of accident control.

STOCK MARKET PROFIT WITHOUT FORECASTING, *by Edgar S. Genstein, Investment Research Press, South Orange, N. J. $3.50.*

A study for investors, based on the author's 30 years of observation of stock fluctuations. Mr. Genstein, president of a Newark chemical firm, defines a norm for stock prices, advises selling when this is exceeded, buying when the price drops too far below it. All this is part of a "variable ratio plan" derived from a ten-year averaging of major stock movements. Mr. Genstein says stock prices vary mainly because of dividends and cycles of optimism-pessimism. A sound work, of particular interest today, when investment firms are trying to make the stock market a solid, regular type of investment for the small customer.


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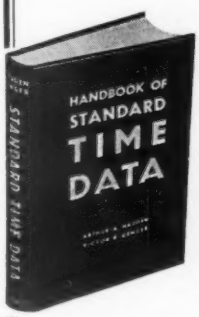


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**A compact, power-driven "Y" unit that eliminates clogging and jam-ups on converging conveyor lines has been developed by the Harry J. Ferguson Co. The unit consists of a power-driven 90-degree roller conveyor curve and a five-foot-long, live straight roller conveyor section, both of which are chain driven by a single ½ hp gearhead motor through universal joints. . . .**

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